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A REMARKABLE PLUMAGE OF THE PRAIRIE HEN (*TYMPANUCHUS AMERICANUS*).

BY WILLIAM BREWSTER.

Plate II.

THE Prairie Hen figured in this number of 'The Auk' is one of four specimens known to me which possess the same remarkable coloring to a greater or less degree. Of these specimens one (the bird which furnished the subject for the plate) is preserved in the American Museum of Natural History of New York, two are in the Green Smith collection of the Museum of Comparative Zoölogy at Cambridge, and the fourth is in my own collection.

Three of these birds show but little variation with respect to the depth and extent of the reddish brown or chestnut coloring. In the specimen represented by the plate, as well as in both of the Green Smith birds, the upper parts are strongly suffused with reddish brown, while most of the lower parts are clear, plain, reddish or rusty chestnut, the usual blackish, transverse bars being nearly or quite wanting save on the sides. My bird, of which a detailed description has already appeared (Bull. N. O. C.,

Vol. VII, Jan. 1882, p. 59), is much less richly colored than the others, especially on the lower parts where the dark markings are but little obscured by chestnut save on the breast and the middle of the abdomen. This specimen, however, has one peculiarity not shared by any of the others; viz., a band or collar of broad, elongated, stiffened feathers which extend continuously around the neck in front crossing the lower portion of the jugulum about in a line with the neck tufts and forming a conspicuous ruff which is mainly black mixed with reddish chestnut.

All four of these singularly colored Grouse are males. As all of them were obtained in the markets, nothing positive is known as to the localities where they were killed. This is unfortunate for definite knowledge on this point is almost essential to any satisfactory explanation of their peculiarities. It seems probable, however, that they represent merely a color phase of *Tympanuchus americanus* (with which all but the bird last mentioned agree prefectly in every respect excepting color); or, in other words, that the Prairie Hen is subject to a form of what is known as erythrism. In any case the rufous plumage must be either of very rare or very local occurrence, for since obtaining my bird I have examined several thousand Prairie Hens in the Boston markets without finding a second specimen.

THE FULMARS OF SOUTHERN CALIFORNIA.[1]

BY A. W. ANTHONY.

SOME time about the last of September the first of the Fulmars make there appearance off the coast of southern California, the exact date being somewhat uncertain and due in a measure to the food supply, and quite possibly also to the weather.

The first arrivals are met with well off shore, with the flocks of Shearwaters, *Puffinus gavia*, *creatopus* and *griseus*, from ten to thirty miles at sea.

[1] An author's edition of 125 copies of this paper was issued March 16, 1895.— ED.

The first birds are usually, I think, in the dark phase of plumage. At any rate my records for the past four seasons show that birds in this plumage are the first to arrive, and the latest spring record,— April 12, San Martin Island, Lower California,— was that of a dark bird. My late spring observations, however, are too scanty to be at all satisfactory, and I should expect to find a few birds at least well off shore as late as April 20.

Ten miles west of Point Loma, at the entrance of San Diego Bay, is an extensive fishing bank extending parallel with the coast for a distance of several miles. This bank is resorted to during fair weather, from October 1 to March 1, by the San Diego fishermen who obtain large quantities of rock cod there for the markets of southern California. The fishing is all done in from seventy-five to one hundred fathoms of water. I think there is nowhere less than fifty fathoms. There are often large schools of small fish on the surface, which attract large numbers of sea birds, including the Fulmars, and it is along this bank that Fulmars are to be found if anywhere near shore. They are hardly what one would call gregarious, although several are often seen in company flying along in a loose, straggling flock. More often they are seen in flocks of *Puffinus gavia*, one or two in a flock of fifty Shearwaters.

Unlike the Shearwaters, however, they seldom pass a craft without turning aside to at least make a circuit about it before flying on. If the vessel is a fishing sloop sounding on the banks, the chances are in favor of the Shearwaters being forgotten and allowed to disappear in the distance while the Fulmar settles lightly down on the water within a few yards of the fisherman. The next Fulmar that passes will, after having made the regulation circuit, join the first until within a few minutes a flock of six or eight of these most graceful and handsome Petrels have collected, dancing about on the waves as light and buoyant as corks. As the lines are hauled up after a successful sound, the long string of often twenty to thirty golden-red fish are seen through the limpid water while still several fathoms in depth, and great excitement prevails. Any Fulmars that have grown uneasy and have started out on the periodical circuit of

the craft immediately alight a few yards to the windward. Those that are on the water and have drifted away hasten to the spot with wings outspread and feet pattering along on the water.

It is more than likely that in hauling up the net one or more fish become detached from the hooks; such fish, if loosened after having been raised twenty fathoms, are sure to rise to the surface a few feet to the windward of the boat. The pressure of the water being suddenly removed, the internal pressure becomes so great that the fish is greatly distended and rises helpless to the surface.

With a hoarse croak and wings outspread the nearest Fulmar pounces upon the unfortunate cod, keeping all others at bay with threatening beak. A few hasty snaps at the eyes or air bladder protruding from the mouth convinces him that codfish are tough, and the first floater, if a large one, is abandoned for the moment, for the second, should there be more than one, or for a snap at the bait on the hooks.

Their excitement by this time has attracted the attention of several Western and American Herring Gulls which hover screaming over the sloop, too shy to attempt to touch the fish while it is so near. Another ocean wanderer meantime has arrived; a Short-tailed Albatross, sweeping along, has noticed the commotion among his lesser brethren, and with a groaning note settles down by the floating fish, keeping all trespassers away by a loud clattering of mandibles; though not infrequently a Fulmar will dispute possession for some time with an Albatross before leaving a fish he has torn open, and I think a Fulmar will usually rout a Western Gull entirely.

In attacking a fish under the above conditions the eyes and air bladder are first eaten, after which the abdomen is torn open, if possible, and the entire contents of the skin torn out piecemeal. I have, however, seen birds seated on the water by the side of fish from which they had eaten the eyes, but were unable to tear open the tough skin.

The bait on fish hooks left hanging over the sides of the boat is often taken within a few feet of the fisherman, and birds are not infrequently hooked, much to the disgust of both the fisherman and the bird. Their confidence in mankind is at all times very

great. I have several times seen them killed by Portugese fishermen who had but to drop a small piece of fish overboard and hit the bird with a club when it swam up to get it.

I was one day becalmed in a small schooner several miles off shore when several Fulmars settled near us after the usual sweep about our vessel. I had a fresh bonito on deck which I began to cut up and toss over to them. The fish was too heavy to float, sinking quite readily, and no attention was paid to a piece that had sunken over eighteen inches, and even those that had reached that depth were not always secured.

In diving they used both feet and wings, the latter only half open, the primaries seeming to be used very little, if any, but kept drawn back with the secondaries. Once under the water they make good headway, seizing the fish, which is swallowed immediately upon reaching the surface.

By lying flat upon the rail of the schooner I could just reach the water with my finger tips when the waves favored me, but even at this disadvantage it was only a few moments till I had captured several Fulmars by coaxing them up with bits of fish and grabbing them when the roll of the vessel placed me near enough. When thrown upon deck they made no attempt to fly, but with outstretched wings hurried to the rail, over which they could just reach, and emptied the contents of their stomachs into the sea, a performance they attempted to repeat whenever they were disturbed. Their actions were so like those of sea-sick landsmen that it was extremely laughable. The popular belief among sailors is that they are really sea-sick, but of course the action is prompted by anything but nausea. It is more likely that the stomach contents are given up, as the Tern disgorges when pursued by a Jaeger, as a ransom.

When tossed overboard it was only a few minutes until the same birds were back again, as full of confidence as before, and one, to the foot of which I tied a piece of twine a yard long, followed the schooner nearly all day, often disappearing a mile or more ahead and returning again.

In catching Fulmars with my bare hands I found that it was quite safe to let go of them as soon as convenient, for they are provided with an unusually sharp bill, and are singularly willing to use it.

My brother once found a Pacific Fulmar in San Diego Bay, the only record, by the way, that I have of their entering the harbor. As he had no gun he gave chase in his skiff and captured it without injury. He said that at first it was rather wild but after flying a few times it gained confidence and only attempted to escape by swimming, when it was easily overtaken and caught. It was in no way injured or diseased so far as I could determine by dissection.

Although mention has been made of their following fishing sloops, fish form a very small part of their diet while on this coast. In fact it is the exception. I have never found small fish in the stomachs of those I have taken, nor have I seen them catch fish for themselves, though I have no doubt regarding their ability to do so should they fall in with a school of small herring or anchovies, and from their associating with the flocks of Shearwaters I infer that they derive a part of their food from such schools of small fry when they are common. There is, however, a large jelly fish (*Medusa ?*) that is usually abundant along this coast during the time of the Fulmars' sojourn, and these are never disregarded by the ever hungry birds. I have often seen a Fulmar sitting on the water by the side of a jelly fish, part of which it had eaten, so filled that it would scarcely move out of the way of the boat. Specimens shot while these *Medusæ* are common I have always found with the stomach filled with these alone, and half a pint of the slimy mass will often run from their mouths when lifted from the water by their feet.

I think the Fulmars enjoy a monopoly of this diet, for I have never seen other species eating it, nor will Gulls, nor any of the sea birds that I have observed, pay any attention to a Fulmar that is eating a jelly fish though they all claim their share if the food is of a kind that they care for.

The abundance of the Fulmars off this coast would seem to have some relation to the abundance of the *Medusæ*, since the winter of 1893–94 was noted for the almost if not entire absence of Fulmars as well as jelly fish until some time in late February or March when both jelly fish and Fulmars appeared in small numbers.

I have occasionally seen Fulmars busily engaged in picking small crustacea (?) from the kelp, but as a rule they prefer to

obtain their food in open water where they are much oftener seen than along the immense beds of kelp (*Macrocystis pyrifera*) and 'bull kelp' (*Nerecystis lutkena*) that fringe the shores for miles along the southern coast. These kelp beds, however, acting as barriers to drifting *Medusæ*, often entangle a quantity of them, and for the time being Fulmars are common near shore. They will also follow the Shearwaters which at times drive schools of small fish into the kelp beds. In diving for fish in competition with Shearwaters they are badly handicapped; their plumage being much less compact makes it not only more difficult for them to get under the water but they cannot dive so far nor swim so fast below the surface as can the Shearwaters.

In flight the Fulmars much more closely resemble the Shearwaters than the Albatross, though they have the habit common to all of these families of sailing along over the water at an angle of about 45° with the tip of the lower wing but just above the waves. The wing beats are rapid, about as in *Puffinus*, and there is at a distance little to distinguish the Fulmars in the dark phase from *Puffinus griseus*, except the shorter, less pointed wings and heavier body of *Fulmarus*.

In rising from the water the Fulmars, Shearwaters and both species of Albatross found with us (*Diomedea albatrus* and *D. nigriceps*) spread the wings and run along the water for a distance to gain sufficient momentum to lift them clear of the waves. The Fulmars will almost invariably, according to my observations, rise toward an approaching boat, while both *Puffinus* and *Diomedea* always fly from anything disturbing them and rise preferably against the wind.

Before discussing the relative abundance of the races, I think best, in order to have names for all of them, to describe a race which I believe to be heretofore unrecognized and as well entitled to separation as is *minor* of the Atlantic. For this race I propose the name of

Fulmarus glacialis columba, subsp. nov. PIGEON FULMAR.

Subsp. char. — Differing from *glupischa* in much smaller size, equalling *minor*, from which it differs in differently colored bill and in the dark phase being much darker.

Type (light phase), No. 4914, Coll. A. W. A. Off San Diego, California, Feb. 21, 1894. General plumage white. Mantle pearly gray, rather darker than light phase of *glupischa* in my collection. Tertials white with brownish gray clouding.

Dark Phase. Type No. 5596, Coll. A. W. A. Off San Diego, California, Oct. 16, 1894. Uniform deep sooty plumbeous. Bill yellow. Iris brown.

The proposed race differs from *minor* exactly as does *glupischa* from *glacialis*. The plumage and color of the bill are practically as in *glupischa*, from which it differs, as above stated, in smaller size, as will be shown in the following tables.

Unfortunately I have mislaid the measurements of a part of my series, which is now inaccessible, but the results as given in the tables below would not be materially changed by the addition of measurements of the series I have examined.

I have but a single skin of *glacialis* to use in comparison. This is an adult in light plumage from Melville Bay. As compared with my skins of *glupischa* taken off this coast the mantle is a rather darker gray. This, however, is doubtless but an individual variation. The bill is noticeably smaller than in Pacific specimens I have seen, the nasal tubes being fully 4 mm. shorter than in Pacific Fulmars of otherwise the same general measurements. As I can find no mention by various writers of this apparent difference in the size of the bills I am forced to believe that there is considerable variation, though the measurements of *glupischa* before me are reasonably constant.

A specimen of *rodgersii* (No. 4913, Coll. A. W. A., Feb. 17, 1894, off San Diego, California) has the primaries slaty, the inner web with a sharply defined white wedge reaching to within 45 mm. of the end of the first primary and leaving a dark shaft line 5 mm. wide. The dusky on the tips of the primaries gradually becomes less and disappears at the ninth. The slaty shaft line becomes also narrower and disappears on the sixth.

In a younger specimen shot the same day the wedge is very poorly defined and much less purely white (grayish). The mantle is much more continuously gray and the tail from above dusky gray. In the adult the tail is pure white with a dusky terminal bar of 12–15 mm.; central rectrices with but a slight clouding of dusky at the end.

In the light phase the three races, *glupischa*, *rodgersii* and *columba*, seem to be nearly equally abundant. The dark birds, which form, I think, about 65 per cent of the whole, swell the ranks of *glupischa* and *columba* considerably. If *rodgersii* has a dark phase it is indistinguishable from that of *glupischa*.

Fulmarus glacialis glupischa (White Phase).

No.	*Locality.*	*Date.*	*Sex and Age.*	*Total Length.*	*Wing.*	*Tail.*	*Chord of Culmen.*	*Nasal Tubes.*[1]	*Tarsus.*	
				mm.	mm.	mm.	mm.	mm.	mm.	
92908[2]	Bering Island,	Feb. 7, '83	♂ ad.	471	320	117	36		52	
92909[2]	Copper Island,	July 14, '83	♀ ad.	458	328	122	36		51	
5871	Off San Diego, Cal.,	Feb. 21, '94	♂ ad.		321	140	40	14	50	
5872	" " "	Feb. 21, '94	♂ ad.		322	145	39	14.5	53	
			Dark Phase.							
89138[2]	Copper Island,	June 8, '82	♀ ad.	425	312	120	35			
92910[2]	Bering Island,	May 4, '83			330	132	36		50	
92911[2]	Copper Island,	July 5, '83	♂ ad.	480	333	131	37		51	
			F. glacialis rodgersii.							
4912	Off San Diego, Cal.,	Feb. 21, '94	? ad.		312.5	138.5	40	14	50	
4913	" " "	Feb. 21, '94	♂ ad.		332.5	143	39	12	50	
			F. glacialis (White Phase).							
4810	Melville Bay,	July 17, '91	♀ ad.		324	128	34	10	46	
			F. glacialis columba.							
4509	Off San Diego, Cal.,	Oct. 12, '93	♀ ad.		293	124	33	15	45	White
4914	" " "	Feb. 21, '94	♀ ad.		283	125	36	15	46	"
5595	" " "	Oct. 16, '94	♀ ad.		280	137	36	14	48	Dark
	" " "	Oct. 16, '94	♀ ad.		305	140	38	13.5	48.5	"
5596	" " "	Oct. 16, '94	♀ ad.		296	131	34.5	12	43	"
	" " "	Oct. 16, '94	♀		305	138	38	14	47	"

[1] The measurements of nasal tubes are from the base of the culmen to the border of the concave outline of the tubes or the shortest measurements taken along the culmen.

[2] Catalogue U. S. Nat. Museum, the other numbers being those from my own collection.

Dr. Stejneger says of the two phases of *glupischa* on the Commander Islands (Bull. 29, U. S. Nat. Mus.): "The young birds of the white forms have the head and greater part of the lower surface suffused with light gray, yet they can never be mistaken for the dark ones, and I doubt very much if any intergradation *between the fully matured adults* of the two forms or phases can be proven. I have observed thousands and tens of thousands of the dark forms breeding, not finding a single one perceptibly lighter, although a small colony of the white form was breeding in the neighborhood but separate from the dark ones, nor were any of the light phase perceptibly darker than usual, and in no case were white and dark birds paired together."

There are periods when nearly all of the Fulmars found off this coast are of the same phase, but at times, when both light and dark birds are found, they are much more apt to separate than to flock together. If a flock of six or eight are seen, and I have seldom seen more than that together, they are usually all of one phase. The young of the light birds are easily distinguished at a distance, the plumage being much lighter than the dark plumage of *glupischa* or *columba*, but the young of the dark phase are in no way distinguishable from the adults by their plumage. A fully adult *columba* in the dark plumage, taken Oct. 16, shows a mottled condition caused by the lighter tips of the old feathers scattered through the fresh plumage. Several of my specimens have parts of the nasal plate loose and in a condition to be easily removed, suggesting that possibly these plates are to some extent deciduous. The material is not sufficient, however, to make it safe to venture an opinion. From the series of birds in the light phase I am of the opinion that three years at least must elapse before they reach the perfect adult plumage. The young of the first year are easily distinguished even at a distance, but those which I take to be two years old are not so easily separated. The mantle, however, is slightly darker, and the wedge on the inner webs of the primaries is grayish instead of pure white as in the adult, and its outline is not so sharply defined. The tertials are grayish-white in the young birds of two years and pure white in the adults. Dr. Stejneger (Bull. 29, U. S. Nat. Mus.) gives the color of the bill of a winter specimen of *glupischa*, taken off Bering Island, as yellow

with tinges of greenish and orange-brownish. The specimens which I have taken off San Diego have all had more purely yellow bills than the plate given by Dr. Stejneger. Dark lines follow the separations of the lamellæ and a dusky spot in front of the nasal tubes reaches at times to the base of the unguis. At the angle of the lower mandible is usually (always ?) an orange spot, its outlines blended with the yellowish of the rest of the bill.

The claim of *F. glacialoides* to a place in the fauna of North America rests, I think, solely upon the type said to have been taken off the Columbia River. If the specimen came from there, as reported, the bird must be regarded as a very rare or accidental visitor to our coast, for none of the later observers have met with the species.

DESCRIPTION OF A NEW *PIPILO* FROM SOUTHERN AND LOWER CALIFORNIA.

BY A. W. ANTHONY.

A SERIES of brown Towhees collected the past year between San Diego and San Fernando, Lower California, differs so considerably from skins in my collection from the northern part of the habitat of *Pipilo fuscus crissalis*, that in order to ascertain the proper status of the southern bird, I have brought together a series representing nearly every considerable part of the habitat of the subspecies, reaching from Mendocino County, California, to Point San Carlos, Lower California, or from about latitude 40° to about 29° 30′. The number of skins examined is about 200, and the results obtained were more interesting than at first anticipated. Vigors's type of *P. f. crissalis* was obtained at Monterey. Unfortunately I am unable to secure a series from that exact locality, but Mr. R. C. McGregor has kindly sent me some skins from there that are in all respects indistinguishable from a fine series from Marin County, collected for me by Messrs. J. and

J. W. Mailliard. These I have regarded as typical *crissalis* in my comparisons. They may be characterized as follows: —

No. 5672, Coll. A. W. A. Size large; a rusty wash pervading the entire lower parts; above dull burnt umber, the feathers edged with gray; pileum rather dull chestnut, not in striking contrast with the rest of the upper parts; upper tail-coverts with rusty tips; malar and submalar region buffy clay color.

Specimens from Mendocino County are but little different; the rusty tints are to some extent replaced by gray, but the measurements remain the same. A series from Butte and Calaveras Counties, which Mr. L. Belding has very kindly collected for me, are decidedly less rusty than typical *crissalis*, the pileum being scarcely different from the back. It is not improbable, however, that breeding birds would show more rufescent crowns, as the color beneath the surface is more rusty in the winter birds I have examined. The measurements are practically the same as those of specimens from Marin County. A single skin in my collection (No. 3737), from Kern County, is different from anything I have examined, being much paler than even those from the desert regions of Lower California. This specimen was taken on the south fork of the Kern River, where many plants characteristic of the Mojave Desert find their way through Walker's Pass, bringing with them at least one representative of the desert avifauna, *Harporhynchus lecontei*. If the single skin in my possession is a fair representative of the Towhee of that region, they would seem to grade toward *mesoleucus* at this point. The specimen differs from typical *crissalis* in being much paler — below ashy gray, belly nearly white, abdomen only with rufus, lower coverts slightly paler than *crissalis;* above almost hair brown, pileum in contrast, between mars and mummy brown; malar and submalar region ashy gray. Size about the same as in typical *crissalis*, but larger than specimens from Los Angeles, San Bernardino, and San Diego Counties.

The birds of Southern California, including a few I have examined from the Colorado Desert, are much smaller than more northern specimens, as well as darker, lacking the buffy wash,

except on the abdomen and flanks. This difference is further increased along the peninsula to the south and is, I think, sufficiently well marked to warrant the separation of the southern bird as a subspecies, which I propose to call *Pipilo fuscus senicula* (from the Mexican name for the bird, *Viecito* — a little old woman).

Pipilo fuscus senicula, subsp. nov.

Subsp. char. — Differing from *crissalis* in smaller size, much less rusty on lower parts, upper parts darker and lower more grayish. *Type*, No. 4785, ♂, Coll. A. W. A., San Fernando, Lower Calif., Jan. 10, 1894.

Above clear grayish sepia; pileum indistinctly vandyke brown; below smoky grayish with rusty wash on flanks and buffy on lower abdomen; lower tail-coverts chestnut; throat tawny clay color, about as in *crissalis;* malar region grayish brown. Wing, 87 mm.; tail, 111; culmen, 13.5; height of bill, 9; tarsus, 26.

Habitat, Southern California, and Lower California as far south as 29° at least.

A June specimen (No. 5371) from the same locality differs from the above only in a somewhat more chestnut pileum and slightly paler lower parts. From *albigula* the present race is distinguished at a glance by its much darker lower parts, more pronounced throat patch (very pale buffy in the St. Lucas bird), chestnut lower tail-coverts, etc. It is quite plain, however, that the characters upon which *senicula* is based are intermediate between *albigula* and *crissalis*, and it is to be regretted that there are no specimens available from the country between San Fernando and Cape St. Lucas. A large series from Southern California prove the birds of that region to be practically the same as regards color as those from San Fernando. The measurements are, however, not quite the same though the most of my skins are nearly or quite as small as those from the peninsula. In the following tables of measurements the relative proportions of both *crissalis* and *senicula* are given from typical specimens from each locality. In obtaining a series of skins for comparison I have been greatly assisted by Messrs. L. Belding, W. E. Bryant, R. C. McGregor, J. and J. W. Mailliard and F. Stephens, to all of whom I take this opportunity of expressing my indebtedness.

MEASUREMENTS OF *Pipilo fuscus crissalis.*

	Mm. Wing.	Mm. Tail.	Mm. Culmen.	Mm. Height of Bill.	Mm. Tarsus.
Aver. of 13 males from Central Cal.,	99.5	127.5	14.5	8.2	28.3
Max. " 13 " " " "	107	136	16	9	30.5
Min. " 13 " " " "	94	119	12	8	27
Aver. " 14 females " " "	92.6	120.3	13.68	8.5	24.7
Max. " 14 " " " "	99	129	15	9.5	30
Min. " 14 " " " "	83	110	13	8	27
1 female, Kern County, California,	92	121	14.8	9.5	29

MEASUREMENTS OF *Pipilo fuscus senicula.*

	Mm. Wing.	Mm. Tail.	Mm. Culmen.	Mm. Height of Bill.	Mm. Tarsus.
Aver. of 9 males from Southern Cal.,	90.6	115.7	13.7	8.7	27
Max. " 9 " " " "	93	119	14.5	9	28
Min. " 9 " " " "	89	111	13	8	26.5
Aver. " 6 females " " "	85.33	110.87	13	8.3	25
Max. " 6 " " " "	89	115	14	8.8	26
Min. " 6 " " " "	82	106	12	8	24.5
Aver. " 11 males " Lower "	87	113	13.08	8.08	26
Max. " 11 " " " "	94	120	14	9	27.5
Min. " 11 " " " "	83	105	13	8	25
Aver. " 4 females " " "	84.5	107.25	13.75	8.5	26
Max. " 4 " " " "	87	113	14	9	26.5
Min. " 4 " " " "	83	105	13	8	25.5

SWAINSON'S WARBLER AN INHABITANT OF THE SWAMPY WOODS OF SOUTHEASTERN MISSOURI.

BY O. WIDMANN.

WHEN we look at a map of the State of Missouri we see that its southern boundary is the parallel of 36° 30′, except at its eastern corner, where we find a curious appendix in the shape of a rhomb, which reaches southward thirty-four miles or half a

degree of latitude, with its southern line resting upon the 36th parallel. This annex is sometimes called the peninsula of Missouri; it contains approximately one thousand square miles and constitutes, therefore, only a small (the sixty-eighth) part of the State; but, though territorially so small, considered from the standpoint of the naturalist it is a very important and valuable addition.

In establishing the boundary line between Missouri and Arkansas it was at first intended to run it all along the parallel of 36° 30′ to the Mississippi River, but the early settlers of the peninsula strongly opposed the political separation from Missouri on the very good reason that they were entirely cut off from the State of Arkansas by impassable swamps while a few ridges with wagon roads connected them with Missouri. For eight months of the year about one-half of the peninsula is under water and the dry land is cut up into a number of islands of all sizes, separated by a network of sloughs and cross-sloughs. The main sloughs run north and south and carry not only the precipitation of the region, but they are also fed by the highwaters of the Mississippi in the east, the Francis in the west, and the Little River in the centre. With the exception of a few narrow ridges, called prairies, running north and south between these rivers, the whole territory is still covered with the original forest, and the comparatively small clearings and deadenings, made for farming purposes on the higher levels of the islands, have not yet changed the woodland character of the region. Even the rivers and sloughs are not free from trees, except in the so-called openings or lakes. Leaving only a narrow channel, there are scattered through the water magnificent cypresses, picturesque tupelos, clusters of waterelms (*Planera*), elbowwood covered with buck-vine, flanked by acres upon acres of flags, which in turn are bordered by wide belts of smartweed, patches of *Nelumbium*, *Nymphæa*, and other aquatic plants. Adjoining the slough, the true home of the cypress and tupelo, is the land of the sweet gum, a tree of formidable size, often over a hundred feet high, with sour gum, hackberry, sycamore, gigantic willows, swamp chestnut oak (cow oak), ash, soft maple, sassafras, mulberry, boxelder, holly, and, as undergrowth, waterbeech (*Carpinus*), dogwood, redbud,

and a variety of small trees and shrubs, as well as climbers, among which we notice with delight the beautiful crossvine and wistaria.

It was on May 12, 1894, when I entered these woods at the southwest corner of the peninsula, crossing the St. Francis and ascending Indian Slough in a skiff about two miles. After walking one mile across an island, I came upon a cross-slough about one hundred yards wide. It had to be waded. It was one o'clock and very warm. I had quite a load to carry and thought it would be best to rest a little. I had just laid down my burden and was in the act of wiping the perspiration from the forehead, when a voice, the voice of a Redbird, rang out, clear and distinctly, "*Hard work, work, work, work, work, hard work!*" I still wondered how he knew it was hard work to carry such an outfit on an ornithological reconnaisance, when over the slough a large bird darted, apparently a Pileated Woodpecker or Good God, as the people call it there; but did it not show an extraordinary amount of white, almost as much as a Redhead? Could it be the long sought for Ivorybill? I concluded not to go on, as intended, but to stay in the vicinity and to keep a sharp look-out; possibly I might get another and better chance for identification. I waited.

In the course of the afternoon I saw nearly the whole feathered population of the neighborhood, watched their doings and listened to their songs. Among other things I had again opportunity to witness a singular act of the Yellow-billed Cuckoo, which I had repeatedly noticed the preceding few days. The female at this particular period of her life and love seems to care little for other food than that which her courteous and attentive mate provides for her. She keeps quietly sitting in all her loveliness, as if lost in pleasant reverie, patiently awaiting his return. In the exuberance of his affection instead of taking a seat at her side, as other birds would do, he gracefully alights on her shoulders, slightly spreads his wings as if in embrace, bends forward over her head and puts into her open bill the tender willow-fly, an Ephemera of larger size.

It was not Sunday, but all birds seemed to wear their best dresses. I observed a male Red-belly, who was not only red-bellied, but really red-throated, red-chinned and red-cheeked.

A Kentucky Warbler had the triangular black patch from behind the eye down the sides of the neck continued in a half-circle so as to almost meet its fellow on the breast.

A Canada Flycatching Warbler wore a real substantial black collar, not merely the series of spots they usually have on the breast.

At one time I heard a great commotion among birds a little way off and on investigation I noticed a snake (*Coluber lindheimeri*) go up the trunk of a chestnut oak. The bark of this tree is pretty scaly and the snake could not so easily find a hold; she had to try to the right and to the left to find a point which would support her, but nevertheless she managed to go up at the rate of one foot a minute. A Downy Woodpecker, a Flicker, and a pair of Summer Tanagers were greatly agitated by her presence; and she was now twenty feet up the tree, when suddenly the angry *killikanik* of the Sparrow Hawk came nearer and nearer, and turning around I saw an old Redshoulder, chased by a male Sparrow Hawk, come down the slough at a lively rate. The Redshoulder, not seeing me, alighted within twenty yards, but the Sparrow Hawk passed by and disappeared. Turning to my snakeship, she also had disappeared and could not be seen again, high or low. It was now four o'clock and I was just going to give up waiting for the return of the Ivorybill phantom, when all at once a novel song came from a papaw thicket about a hundred yards up the slough. Its novelty struck me at once with the hope, nay, with the certainty, that it meant a prize. It opened à la *Seiurus motacilla* and ended à la *S. noveboracensis*. It was no *Oporornis*, no *Geothlypis*, no this, no that — in short, it could be nothing else but *Helinaia*, though the surroundings did not exactly fit the canebrake dweller of the sunny South. *Helinaia* here in this dark, deep wood, where the cypress and the sweet gum join their lofty branches, where under a canopy of hornbeam, ash and dogwood, and a thick undergrowth of papaw, hazel, spicebush (*Lindera*) and Hercules club (*Aralia spinosa*) interwoven with bamboo vine (*Smilax*) and muscadine, the ground is covered with a veil of perpetual gloom.

It took me considerable time to locate and to get a good look at the originator of the strange song, but at last I found him,

comfortably seated on a dry limb of a dogwood some fourteen feet above ground. He had doubtlessly been sitting there ever since I first heard him and took no pains at concealment. I had him now in good light, fixed my Lemaitre upon him, and had an excellent view of him. There he was in life size just as Brewster painted him for us some nine years ago. Every few seconds he would lay back his head until the bill pointed vertically up, and with ease, but earnestness, render his famous little song. Evidently some sort of inspiration was upon him, and I wondered how many times he would say his lesson. I timed him again and again, seven and eight times a minute was his rate all the time. When approached too close he would fly to another small tree a few rods off and sing again.

He kept singing and I kept looking for his nest, until the sun cast long and deep shadows through the lonely forest. He had said his lesson about a thousand times now, but I had to console myself that if he had a nest it must be on the ground or somewhere. On the following day when I passed the place at 7 A. M. he was singing again, but this time I did not stop but crossed the slough and penetrated deeper into the dark recesses of an almost unsettled region. After walking half a mile I came upon another slough called Seneca Slough, a broad sheet of water entirely covered with aquatic plants, mostly smartweed, and beautifully ornamented with giant cypresses and senile tupelos, whose decapitated hollow trunks, resembling chimneys, serve Swifts for roosts and probably for nests.

In the willows at the bank a Philadelphia Vireo sang its modest song, but never got farther than the first three syllables. On the dry arm of a mighty cypress perched a beauty: a Swallow-tailed Kite! She had come to preen her feathers on this lofty perch. Her dark brown eye wandered for a moment over the environs but her scanning did not reveal my presence. I think she came directly from her nest, since a violent shaking of her body preceded all farther operations of her morning toilet, which took her just ten minutes. Another vigorous shaking of her body and off she went to whence she came.

I marched four miles from there that day and the now well-known notes of the Swainson's Warbler reached my ears four

times, coming from thickets like the first, but farther away from sloughs, though not from water, since these woods are full of pools of all sizes and depths.

The soil of the St. Francis basin is a light sand, several feet in depth, resting on a clayey subsoil. It is a peculiarity of the trees of this region, especially the sweet gum (*Liquidambar styraciflua*) to rot at the point where sand and clay touch. In this condition the tree is easily blown over, and in its fall the roots take up the surface soil, causing an excavation a few feet deep and several yards wide, a convenient receptacle for the water, a miniature pond with impermeable bottom. Such pools are scattered in countless numbers throughout the woods on the higher levels, while all depressions are naturally of a very swampy character.

In such woods the Water Thrush is not confined to the water courses as in other parts of Missouri, but is found in every part of the wood; so are the Prothonotary, the Parula, the Cerulean, and apparently also the Swainson Warblers. It is here that the Ovenbird, the Pipilo, the Blue-winged Yellow Warbler and the Catbird are restricted to the oases of high ground, while the Hooded and Kentucky Warblers, the Maryland Yellowthroat, and especially the White-eyed Vireo, are at home and abundant on high as well as on low ground, the two last named even in the slough itself.

From a week's tramp through the region I came to regard the Swainson Warbler as a regular, though not common, denizen of the swampy woods of Dunklin County, Missouri.

BIRD MIGRATION AT GRINNELL, IOWA.

BY LYNDS JONES.

I. SPRING MIGRATION.

EVER since the inauguration of systematic study of bird migration by Prof. W. W. Cooke in 1884, it has been my purpose to collect sufficient data to determine the sequence of arrival of the various migratory birds at Grinnell, Iowa, where

my studies of the subject began and continued up to the summer of 1890. With my removal to Ohio in the fall of 1890, and consequent cessation of further study at Grinnell, the purpose to put into permanent and accessible form the results of that work has grown and finally taken definite shape in the present paper.

No one can realize more than I the insufficiency of the data collected for a final decision upon the points treated. But the conclusions logically reached from a study of these notes may furnish an impetus for further work in the same line.

From one to eight or even ten hours were spent in the field nearly every day from January until July, and from August until December. An early morning and a late afternoon hour were found to be the most fruitful. Very often this morning and evening work was supplemented by a midday hour, always with note-book and field-glass for ready use, and a gun for emergencies.

My work was chiefly confined to a region nine miles in diameter near Grinnell, Iowa, latitude 41° 44′. The center of this region lay at my home in a small natural grove three miles northwest from Grinnell, on the line between Poweshiek and Jasper counties.

This grove is of about one hundred acres extent, and is noted in all that region as a place where more species and individuals of birds can be found than anywhere in miles around. It covers five rather high hills which slope to the north and west, and is abruptly terminated on the north by a small stream which flows at the foot of these hills. It is bounded on the south by cultivated fields. The width is about one-half the length, the greater axis running east and west.

The grove abounds in sheltered nooks and tangled undergrowth, but has no swamp nor pool of still water. Oak, hickory, and black-walnut trees are the most numerous, with a fair supply of lindens, poplars, elms, hackberries, wild cherry, cottonwood, locusts and willows. Hawthorn, prickly ash, wild crabapple, wild plum and the black haw abound in thickets; while the hazel bush is the prevailing underbrush. Wild berry bushes are abundant. Wild grape, 'bitter sweet,' and Virginia creeper

vines are everywhere. Natural groves occur at intervals of four or five miles in the country at large.

This part of Iowa is in the rolling prairie region, the stream beds lying about seventy-five feet below the hilltops. The general direction of the principal streams is southward. Originally small ponds were to be found in the bottomlands, and a few on the upland divides; but these have disappeared in the vicinity of Grinnell, leaving no natural bodies of water. Within the limits of Grinnell there are three or four small ponds which are visited by large numbers of water-fowl and shore-birds every year. The flooded streams in spring also attract many.

Every farm has its orchards and shade trees, very few being without either osage orange or willow hedges both as street boundaries and inland field boundaries. Each has its pasture lot, hay lot, and cultivated fields. A few small patches of virgin soil still remain. 'Sloughs,' or bogs, are small and thickly overgrown with sedges and rushes. The once numerous and extensive 'cat-tail' bogs are nearly gone.

The percentages of all sorts of surfaces are as follows: Under actual cultivation, 35 per cent; pasture land, 20 per cent; hay land, 10 per cent; timber, including orchards, hedges and shade trees, 20 per cent; neglected fields, 5 per cent; bog land, 5 per cent; virgin soil, 5 per cent. With the addition of a small lake or large river with accompanying swamps, no better field could be desired for a study of the inland birds.

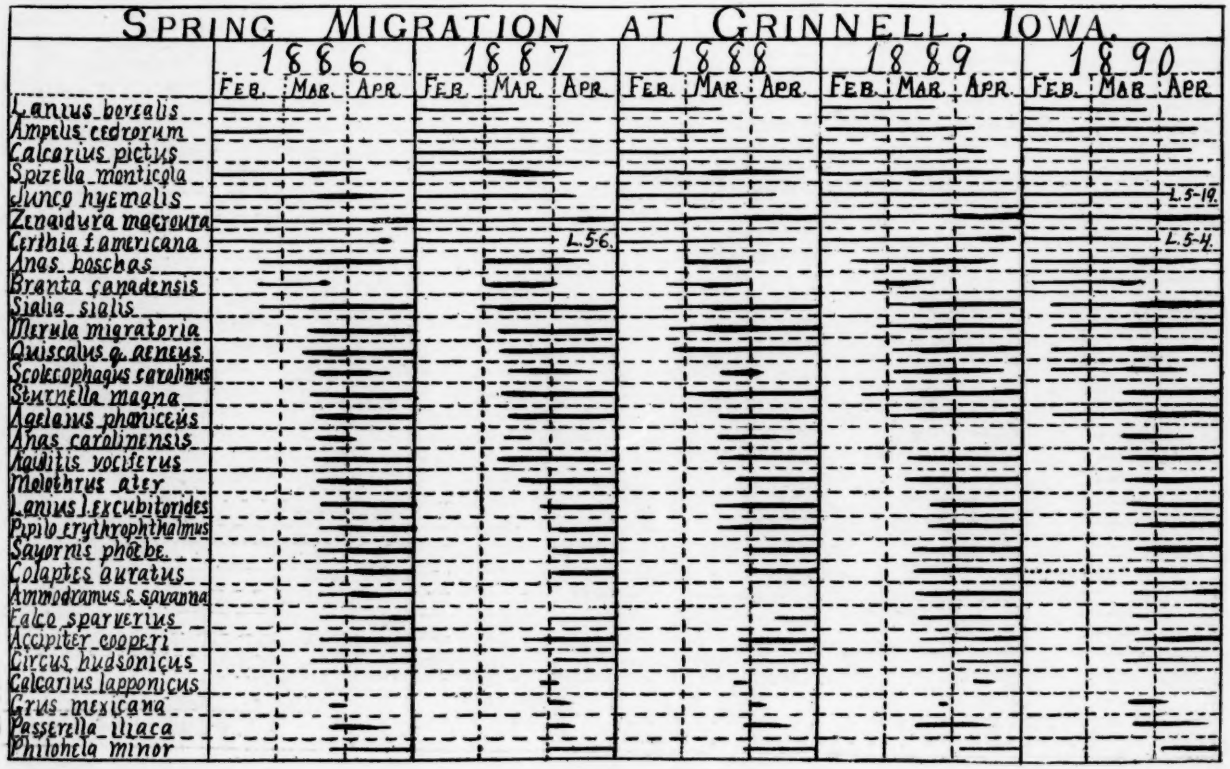
Grinnell lies upon a narrow water-shed in the central part of the State, which is the highest surface on its parallel in the State east of Des Moines. The direction of this water-shed is nearly north and south. The only apparent effect of such an elevated position is the somewhat later arrival of most species than at stations less elevated on the same parallel. It will be seen, however, that some species common in the less elevated localities are not so at Grinnell, elevation being the only physical feature not common to both. To the southward there is nothing to interfere with the continuous flight of the migrating host of birds.

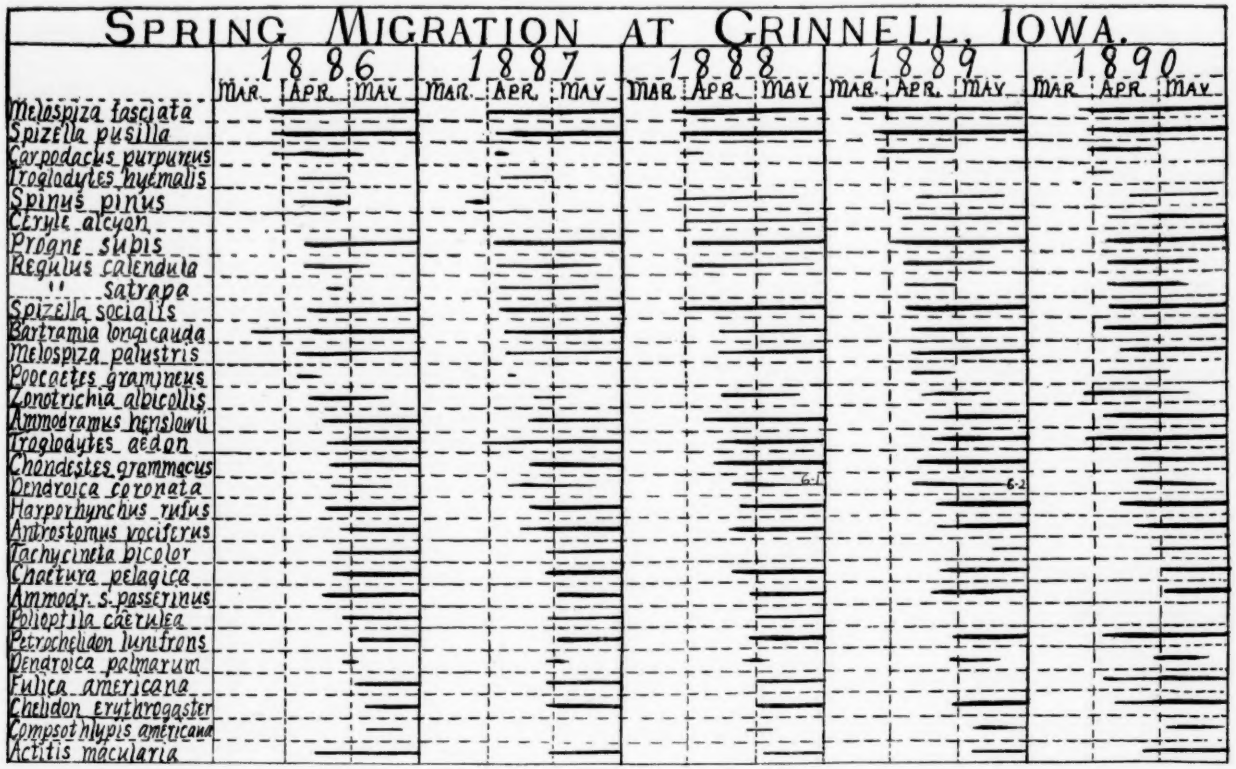
It thus appears that the region is a very favorable one for many groups of birds, but less so for others. The scarcity of

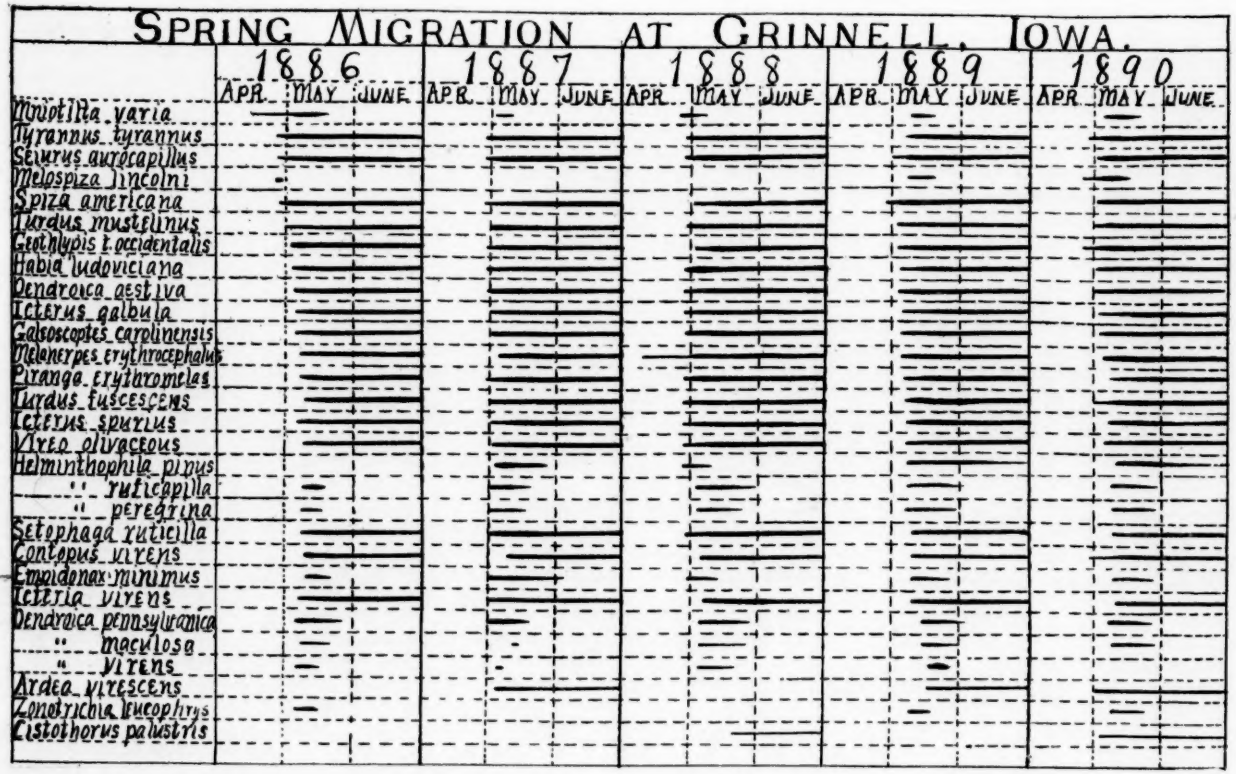
timbered tracts of large extent is rather a boon than a detriment, because the woodland fauna is much more restricted and condensed than would otherwise be the case. Every copse of trees is swarming with the Warblers and Kinglets in their season. The broad fields are teeming with Sparrows, Larks and Bobolinks. Here is the paradise of the White-rumped Shrike among the osage orange hedges. Every farm has its colony of Bronzed Grackles. Cowbirds are so familiar that they cease to be interesting! Woodpeckers, Flycatchers and Wrens abound; and Swallows and Swifts and Nighthawks are constantly skimming the fields. The Whip-poor-will and the Thrushes find congenial retreats in the deeper woods; while the Robin and Bluebird are everywhere. At favorable times during the migrations, the air is alive with Ducks, Geese and Cranes passing northward in immense flocks; the Sandpipers being not less numerous for a brief period. Grebes, Rails and Herons are often seen; while flocks of Gulls, Comorants, and Pelicans, and even Swallow-tailed Kites, are sometimes noted; but they are not to be depended upon as regular migrants. Horned Larks, Grouse, Hawks, and Owls are permanent residents; as well as the Crow, Blue Jay, Chickadee, White-bellied Nuthatch, and some of the Woodpeckers.

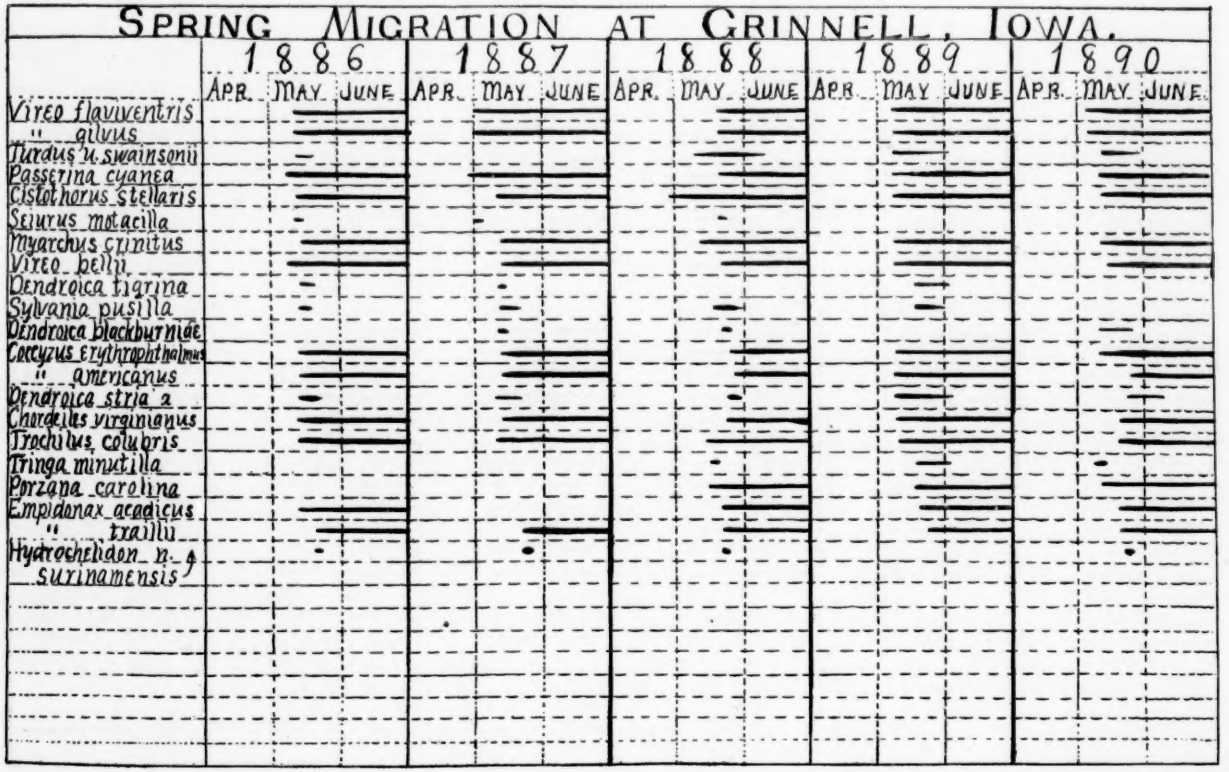
In the accompanying charts, many species belonging to the bird fauna have been omitted because they would be of no value in the scheme. Of one hundred and seventy species recorded as strictly migratory at Grinnell, only one hundred and ten appear on the charts. The first year's work — 1885 — is also omitted because it has already been published in Prof. W. W. Cooke's 'Report on Bird Migration in the Mississippi Valley.'

In these charts an attempt has been made to indicate not only the dates of arrival and departure, so far as they come within the limits of the chart, but the time of arrival or departure, or both, of the bulk of each species. This is indicated by the heavier portion of the lines opposite the name of each species, the lighter portion indicating simply its presence. Some species are common on the first day of arrival; others are not so for days or weeks, while some never become common.


SPRING MIGRATION AT GRINNELL, IOWA.
1886
1887
1888
1889
1890
FEB. MAR. APR.
Lanius borealis
Ampelis cedrorum
Calcarius pictus
Spizella monticola
Junco hyemalis
Zenaidura macroura
Ceithia f. americana
Anas boschas
Branta canadensis
Sialia sialis
Merula migratoria
Quiscalus q. aeneus
Scolecophagus carolinus
Sturnella magna
Agelaius phoeniceus
Anas carolinensis
Aquilis vociferus
Molothrus ater
Lanius l. excubitoroides
Pipilo erythrophthalmus
Sayornis phœbe
Colaptes auratus
Ammodramus s. savanna
Falco sparverius
Accipiter cooperi
Circus hudsonicus
Calcarius lapponicus
Grus mexicana
Passerella iliaca
Philohela minor
L. 5-6.
L. 5-19.
L. 5-4.


SPRING MIGRATION AT GRINNELL, IOWA.
1886
1887
1888
1889
1890
MAR. APR. MAY
Melospiza fasciata
Spizella pusilla
Carpodacus purpureus
Troglodytes hyemalis
Spinus pinus
Ceryle alcyon
Progne subis
Regulus calendula
" satrapa
Spizella socialis
Bartramia longicauda
Melospiza palustris
Poocaetes gramineus
Zonotrichia albicollis
Ammodramus henslowii
Troglodytes aedon
Chondestes grammacus
Dendroica coronata
Harporhynchus rufus
Antrostomus vociferus
Tachycineta bicolor
Chaetura pelagica
Ammodr. s. passerinus
Polioptila caerulea
Petrochelidon lunifrons
Dendroica palmarum
Fulica americana
Chelidon erythrogaster
Compsothlypis americana
Actitis macularia
6-1
6-2


SPRING MIGRATION AT GRINNELL, IOWA.
1886
1887
1888
1889
1890
APR. MAY JUNE
Mniotilta varia
Tyrannus tyrannus
Seiurus aurocapillus
Melospiza lincolni
Spiza americana
Turdus mustelinus
Geothlypis t. occidentalis
Habia ludoviciana
Dendroica aestiva
Icterus galbula
Galoscoptes carolinensis
Melanerpes erythrocephalus
Piranga erythromelas
Turdus fuscescens
Icterus spurius
Vireo olivaceous
Helminthophila pinus
" ruficapilla
" peregrina
Setophaga ruticilla
Contopus virens
Empidonax minimus
Tetrtia virens
Dendroica pennsylvanica
" maculosa
" virens
Ardea virescens
Zonotrichia leucophrys
Cistothorus palustris


SPRING MIGRATION AT GRINNELL, IOWA.
1886
1887
1888
1889
1890
APR. MAY. JUNE.
Vireo flaviventris
" gilvus
Turdus u. swainsonii
Passerina cyanea
Cistothorus stellaris
Seiurus motacilla
Myiarchus crinitus
Vireo bellii
Dendroica tigrina
Sylvania pusilla
Dendroica blackburniae
Coccyzus erythrophthalmus
" americanus
Dendroica striata
Charadrius virginianus
Trochilus colubris
Tringa minutilla
Porzana carolina
Empidonax acadicus
" traillii
Hydrochelidon n. surinamensis

When the line representing a species begins on the line separating two years, it indicates that the species was present all winter; and the end of such a line on a line separating two years, indicates that the species remains all summer. In a few cases a species not a summer resident remained longer than the last month indicated on the chart; its final departure is recorded in figures in the last space for the year, opposite its name.

The species are arranged on the chart in the order of their average arrival for the five years. If a species, as the Flicker in 1890, has been present all winter in very limited numbers in especially favored localities, account is taken only of the first migrating individuals, the dotted line indicating the presence of the few winter birds. When apparent irregularity is evidently due to the scarcity of the species, as in the case of Sparrow Hawk, its position is determined by the three earlier and more regular dates of arrival.

Bird movements are profoundly influenced by the weather. With the charts illustrating the bird movements before us, and a parallel running account of the weather, we shall be enabled to see the force of this influence.

During the five years from 1886 to 1890 inclusive, January opened very cold with more or less snow, and continued cold, with a few warm days, closing with below zero weather every year except 1890. This year a thaw began on the 27th of the month and ended February 7, after taking away ten inches of snow.

With the one exception of 1890, February also opened cold and snowy. In 1886 there was a warm period beginning on the 6th and closing on the 18th, followed by six cold days with northwest winds. The month closed very warm. In 1887 there was no warm period of any consequence during the whole of the month. But in 1888, after two weeks of continuous cold weather, there were three moderately warm days centering on the 13th, and another short period of warmth from the 22d to 24th, the month closing cold. In 1889 there was a slight thaw on the 21st, and another on the 28th, but the ground was bare during the last half of the month, with no severe weather. The remarkable warm period of 1890, ending February 7, has already been

mentioned. Besides another short warm period centering on the 14th, the month was cold.

Turning to the charts, no movement of any sort is seen until February, January not appearing on the charts for that reason. In February, 1886, there is a movement of three species northward about the 18th, at the close of the first extensive warm period. In 1887 no movement occurred, the month being cold throughout; 1888 shows a very decided movement of four species, about the 22d, during a warm period; 1889 shows two movements during its two warm periods; and 1890 two, the first one caused by the late January thaw, the other by the only other warm period.

In the same manner March movements may be correlated with March weather. In 1886 there were two decided movements, the first occupying the middle of the month, the other the 25th or thereabouts. The early part of the month was warm, followed on the 17th by a cold period, with a few days, centering on the 25th, of warm weather, closing cold. In 1887 the first movement of the year occurred on the first of the month, closely followed by a second movement, ending with a slight third movement. The first and second movements occurred during the same warm period, ending on the 12th; the last movement during the early part of a warm period late in the month. The early part of March was cold in 1888, and no movement occurred until the 15th, during a warm period of six days. Late in the month another warm period and another movement occurred. March opened warm in 1889, then became cold, and warm again on the 22d to the end of the month. At these times movements occurred. In 1890 there is the remarkable phenomenon of a whole month without any movement whatever after the first seven birds had arrived. But the last half of February and the first half of March were unusually and persistently cold. When the warm period did come, on March 15, the birds flocked in!

April is a variable month, without definite weather limits. From March, on the one hand, it receives warm or cold periods as the case may be, and on the other hand it merges into distinctively May weather. The birds properly belonging to it are

among the more hardy of the later arrivals, and are therefore not so greatly influenced by the comparatively moderate changes of weather. Hence, even during what must be called cold periods, many species move northward. During long warm periods there is no massing of species such as appears in March or May. But really severe weather is, of course, followed on the first warm days afterward by large numbers of belated birds moving northward.

Thus, in 1886, April weather was very mild until the 23d, when a cold period closed the month. The chart shows a very scattered movement without definite 'wave' boundaries. Even after the cold period had begun, several species were moving. April in 1887 shows a well marked 'wave' during the second week while the weather was warm. Then a rather scattered movement occurs during a cold period beginning on the 13th and ending on the 23d. The closing warm period extended into May, causing a great bird wave of thirty-six arrivals within eight days. April in 1888 shows greater irregularity. The month was a cold one, with the earlier and later days warmer. The earlier warmth had been felt in March and so lost its effect for April. The birds pushed forward in spite of the inclement weather, arriving in small and scattering groups. But with the later favoring warmth the host arrived, smaller than the preceding year, yet a respectable company of twenty-four. April's one warm wave in 1889, from the 14th to 21st, scarcely made a perceptible impression on the scattering migrants. The dates are scattering. In 1890 there were no marked changes of temperature. The weather was generally favorable to bird movements. The only well marked movement occurred about the 6th; other dates are very scattering.

To May belongs the one great movement of the year. April usurped a part of this in 1888, encroaching slightly in 1887. The weather varied considerably in the five years. May in 1886 opened warm, with a cold period from the 14th to 17th, the last two days being cold. May in 1887 opened with the first day warm, followed by five cold days, these followed by high temperature until the 17th, when three more cold days intervened. The month closed cold and wet. In 1888 the

6th and 7th were warm, and the 21st to the end of the month, the remaining time being cold. In 1889 the first half of May was warm, with the 15th, 20th and 29th cold. In 1890 only one cold period occurred,—about the 8th. Thus, in 1886, 1889 and 1890, when either the latter part of April was cold, or else there were no marked changes of temperature during late April and early May, the May movement occurred during the second week. While in 1887 and 1888 the very decided warm wave of late April caused a much earlier movement.

May has another movement which occurs during the second or third week. By that time the weather has become sufficiently settled so that bird movements are hardly affected by the changes which occur.

June is the month of final reckoning. No species arrive, but tardy ones leave for more northern nesting grounds. The weather is always warm and balmy.

This hasty survey of the weather with the migration movements, shows us that the more decided changes of temperature greatly influence bird movements; but the less decided changes do not greatly influence some species. This leads us to the consideration of such species as are not dependent upon the weather to any considerable extent. These arrive upon nearly the same date year after year. They are as follows:—

March 19 (two days).	Towhee, Cooper's Hawk, Cowbird, White-rumped Shrike.
March 28 (two days).	Field Sparrow, Purple Finch.
April 5 (two days).	Purple Martin, Ruby-crowned Kinglet, Chipping Sparrow, Belted Kingfisher.
April 28 (two days).	Oven-bird, Dickcissel, Kingbird, Palm Warbler, Wood Thrush.
May 3 (two days).	Chestnut-sided Warbler, Yellow Warbler, Rose-breasted Grosbeak, Red-eyed Vireo, Catbird, Orchard Oriole, Baltimore Oriole.
May 19 (two days .	Traill's Flycatcher, Black Tern.

In addition to these groups, which migrate at certain fixed times, and of course in company in a certain sense, there are similar groups which are more irregular with regard to fixed dates, but which move in company no less regularly. To these

no definite dates can be given. The first of these groups is made up of the Bluebird, Canada Goose, and Mallard. They form the first bird 'wave' of the season, sometimes accompanied by the next group which forms the second wave. The Robin, Bronzed and Rusty Grackles, Killdeer and Marsh Blackbird form the second group.

The first may be called the February group, the second the early March group. Following these is the group of March 19th already given, and another belonging to late March composed of Fox, Song, and Harris's Sparrows, and Phœbe.

April's first group has been given above (April 5). Three species, Swamp and Grass Sparrows and Bartram's Plover, belong to the middle of the month. The late April group belongs to the class of regulars.

The May movements become so condensed that a difference of a very few days in arrivals throw them into different groups, or out of all of them. Thus an early May group consisting of Redstart, Least Flycatcher and Nashville and Tennessee Warblers differs from the May 3 group. There is an earlier middle of May group and a later middle group besides the regular one of the 19th. The species belonging to the first of these are Warbling and Yellow-throated Vireos, and Indigo Bunting; those belonging to the later are Bell's Vireo, Crested Flycatcher and Yellow-billed and Black-billed Cuckoos.

Each year has a certain number of 'bird waves' that are well marked as such. The years 1886, 1888 and 1890 each had seven, and 1887 and 1889 six. But the time of their occurrence varies from year to year. The second wave of 1890 occurred fully two weeks earlier than the first one of 1887, and no later than the first of any other year. Fluctuations are due to the weather.

The number of species composing a wave also varies at different times during a season. The first wave rarely exceeds three species, while the late April or early May wave often reaches thirty moving species.

These waves are not necessarily formed by either of the foregoing groups, though they may sometimes be so formed; but they may consist of either or both combined with species too irregular

to be assigned to any group. Hence, a given species may be found in either one of two or more waves in successive years. The species which always migrate in company, but at irregular times in successive years, are more likely to be found in the same relative wave each year than any others. Phœbe came with the third wave each year except one. Meadowlark, assigned to no group, came with the first wave once, the second twice, and the third once.

The term "bird wave" has been freely used. What is a bird wave? In his excellent 'Report on Bird Migration in the Mississippi Valley,' on page 26, Prof. W. W. Cooke thus defines it: —

"(1) A 'bird wave' may be considered to consist of a very large number of individuals of one or many species, which suddenly invade a certain area. . . .

"(2) Certain species known to be migrating in company on a given day may be considered to constitute a 'wave.'"

Hence, a 'bird wave' consists of not only the species *arriving* at a certain time, but also all which are found to be increasing or decreasing in numbers, or departing northward. All of these movements are represented on the charts. There are other movements of scarcely less importance in the migrations which cannot be so represented. Such are the movements of individual birds of resident, winter visitor, transient and summer resident species, without any apparent increase or decrease of the numbers in a given locality. It is evident that such belong to the 'bird wave,' even though the charts take no account of them. Hence, a bird wave is often, if not always, much larger than can be shown by any graphical representation. This unrepresented movement has been of great service in determining the bird waves of apparently small extent. In the larger movements its value is less evident, but it has a no less active part.

Taking all sorts of movements together, there are two periods of maximum bird activity during the migrations. The first one occurs during the middle of March, when the first really spring warmth sweeps over the country. The second occurs during the first half of May. This one is finely shown on the charts. During this period there is a massing of species which is almost bewil-

dering. The species which arrive during this time are among the most common of the bird fauna, and are represented by large numbers of individuals.

It is interesting to note the average number of moving species for each month during the five years. Of those which first arrived there were four in February, seventeen in March, thirty in April, forty-one in May, and none in June. Of those which arrived the previous month and became common, or those which decreased in numbers but did not finally depart until the following month or later, there were none in February, five in March, five in April, four in May, and none in June. Of those which departed to more northern breeding grounds, there were none in February, two in March, ten in April, eighteen in May, and two in June.

Adding these three sets together, the total number of moving species by months is for February four, March twenty-four, April forty-five, May sixty-three, June two. Of the whole average movement there is for February 2.8 per cent, March 17.3 per cent, April 33.4 per cent, May 45 per cent, June 1.5 per cent. Deducting from April the late April arrivals of 1887 and 1888 which properly belong to May, and adding them to May, there is left for April 27.6 per cent, and for May 50.8 per cent. Half of the whole spring movement occurs in May! These percentages are based only upon species. If individuals were taken into account the percentage for May would be much higher. When we remember that nearly all of the species which arrive in May have come before the beginning of the third week, some conception can be formed of the magnitude of the 'early May wave.'

March, April, and May are the months of bird migration. February cannot be wholly counted out, but June records might almost be considered accidental. March species are larger, stronger and hardier, April species transitional, and May species smaller, weaker and more delicate, but more numerous.

The irregularity in the arrival of individuals of the same species is one of the first notable things about the migrations. Males and females do not travel together. My notes upon the movements of the sexes, and upon the arrivals of old and young males are pretty full, covering fully five years. Notes on the

movements of young females, as distinguished from old females, are too few to be of value.

From these notes it appears that the length of time between the arrival of the first males and first females differs at different times during the season, weather playing an important part. It is longer early and shorter late. Speaking generally, the first females arrived a little later than did the bulk of the males. In March this is from a week to three weeks; in April a little over a week, and in May about five days. There is a gradation from the longer period into the shorter, of course. It is generally believed that young birds migrate later than old ones. I have no general notes bearing upon the subject; but a great deal of careful study, in this line, was given to certain species, the young males of which were more readily distinguished from the old males and females. Prominent among these were Rose-breasted Grosbeak, Scarlet Tanager, Ruby-crowned Kinglet, Wilson's Warbler and the Orioles. In the case of these species, the old males arrived first, followed in about four days by the young males; the females arriving a little later still. All of these belong to the later arrivals.

I am not prepared to say that the young males of other species migrate at relatively the same time. The few notes which I have bearing upon the subject would seem to indicate that they do, at least among the smaller birds which arrive in late March, April and May. That subject will bear much more investigation.

There were two notable exceptions to this sequence of arrival of old males, young males, and females. One was in May, 1889, when the last great wave was checked by the cold weather of late April. The other in March, 1890, when a month intervened between the second and third waves. At these times not only most of the summer residents, but also many of the transient species arrived mated. Not all individuals, but very many of them. We would expect mating to begin as soon as the females appeared among the host, wherever it might be upon the northward journey, just as it does under normal conditions. In these two instances the weather northward must have been such that the males could not move forward; but southward, favorable to the movement of the females already begun. This state of

weather continued long enough would bring the later migrants up with the earlier ones, and bring about the state of affairs above mentioned.

There are recorded in my notes several instances of birds arriving mated. But these are isolated cases of individual pairs. They do not affect the main question. All exceptions must be considered rare, when the whole bird population is taken into account.

Most birds arrive singing. The first intimation we have of approaching spring is the true song of the Prairie Horned Lark, the 'booming' of the Prairie Chickens and the weird voices of the Owls. The warm days of January are their first signals for heralding spring. Some birds are not singing when they appear. A notable example is Dickcissel. When my studies of the migrations began, I did not know the first individuals of this bird which came in the spring. It was not until Mr. Otto Widmann, now of Old Orchard, Mo., then Superintendent of Migration in the Mississippi Valley, told me that the actions of the first arrivals were very different from what I was accustomed to later in the season, and that the queer chirping note really belonged to Dickcissel, that I realized that a bird could arrive silent. Henslow's Sparrow is another silent arrival, beginning its song only when the females arrive. I have many times failed to hear song notes from several of the transient Warblers during their entire stay. There are many other examples.

Nothing has been said about the night migrations. Not a little attention has been given to that phase of the subject, but my notes are not of a character to warrant any discussion of it at this time. More study of the night migrations here in Ohio will enable me to make far more than is now possible of those taken in Iowa, just as the years of study of the diurnal migrations in Ohio have thrown light upon Iowa notes. Conditions are different here at Oberlin, with the lake so near northward. Without the comparisons which this region affords, and the broadening of the field of view which it gives, the subject seemed almost unworthy of consideration at such length. I hope sometime to draw a number of interesting comparisons between the movements at Grinnell, Iowa, and at Oberlin, Ohio.

It must be distinctly understood that all of the foregoing facts, as well as those which are to follow on 'Fall Migration,' are local, relating only to the vicinity of Grinnell, Iowa. Everything given has been taken from notes which were made in the field, weather excepted. The effect of weather could have been more clearly shown from weather records extending over the whole Mississippi Valley; but these were not accessible.

BIRDS OF SAN FERNANDO, LOWER CALIFORNIA.

BY A. W. ANTHONY.

THE region embraced within the limits of the present paper has for its center the old abandoned copper mines of San Fernando, one league south of the ex-mission of the same name which is situated about twenty-five miles from the Pacific coast of the peninsula, in about latitude 29° 30′. It has an approximate altitude of fifteen hundred feet above sea level and is the center of one of the most barren of the Lower Californian deserts. At the old San Fernando mission is found a little marshy ground and a few pools of salty, alkaline water that is so disgusting that even mules from more favored lands to the north refuse to drink it until forced to do so by continued thirst. There is enough, however, to nourish a very respectable growth of mesquite, cat-claw and palo verde which extends down the narrow valley for a mile or more below the old ruins of the mission. The mining camp is separated from this, the only water and verdure for forty-five miles, by a low rocky range of hills about three miles in extent. The mines are on the edge of a somewhat open country, which extends to the coast at San Carlos in a series of mesas and level valleys. At the mines, and in two of the arroyos between that point and the coast, wells had been dug and a limited quantity of water obtained at about eight feet in depth. The only natural surface water other than that at the mission was a small tank

formed in a natural cavity in the rock in a deep cañon about ten miles south of the mines. The natives of El Rosario, forty-five miles northwest of the San Fernando mission, told me that this region was visited by a copious rainfall about one year in five, the other four being often without any rain whatever, a statement that was borne out by the general appearance of the country, which supports hardly any vegetation but the most hardy of desert species.

A short distance below El Rosario, the traveller en route to San Fernando meets with the first candle-wood tree (*Fouquieria columnaris*); these become rapidly more common until they form 'forests,' covering the entire country with a growth dense enough to be called well timbered were the 'trees' anything more than poles. The cirio, as the Spanish call the candlewood, seldom branches unless the top is broken or otherwise injured, and the mature plant resembles nothing so much as a gigantic inverted parsnip, often fifty or seventy-five feet in height, with a bunch of yellowish blossoms at the extreme top. The trunk has a reticulated framework for an inch or two in depth and then a soft watery pith takes the place of wood. This seems to be appreciated by the Woodpeckers, for I seldom found a dead tree that did not show the marks of either *Dryobates* or *Colaptes*, nor were the live cirios exempt. Almost exactly coëxtensive with the cirio, and dividing with it the honor of a forest tree, was the cardoon or giant cactus (*Cereus pringlei*), the largest of all the cacti. This was not so abundant as the cirio, but much more conspicuous owing to its larger trunks. Fine specimens on the San Carlos mesa, near San Fernando, measured not less than seventy feet in height, with from six to twelve branches, each from twenty-four to thirty-six inches in diameter. The smaller cacti were abundant, often forming thickets impassable without the aid of a brush knife. On the hills near the mines were a few elephant trees (*Veatchia discolor*), and in a valley ten or twelve miles south, they formed one of the chief features of the landscape. This botanical curiosity starts out in life with the apparent intention of becoming a large, well-formed tree, but after attaining a height of four to eight feet, and realizing what a desolate country it is destined to live in, it seems to have become

despondent and devoted all its spare time to thickening its trunk and branches until they become enormous in proportion to the height of the tree, and very badly contorted. Although I have seen the tree nearly or quite every month in the calendar, I have never seen it in leaf or flower. Along the dry arroyos about the mine were a few stunted mesquites, cat-claw and a species of *Prunus*, and a scattered growth of grease wood (*Larrea*) was to be found in most of the open country.

The notes upon which the present paper is based were taken during two or three short trips through the country in 1887–88, a week spent in the region in January, 1894, and from April 26 to June 25, 1894, during which time I was located at the copper mines near the San Fernando mission. At the time of my visit, the country was undergoing one of its dry spells, no rain having fallen for the past three years.

With the exception of the immediate neighborhood of the mission, birds were very scarce and remarkable for their shyness. A few migrants lingered about camp after my arrival April 26, but soon left. As I was constantly riding about between the coast and the mine, it is not likely that very many of the summer residents escaped notice. The list is, however, somewhat remarkable for what it does not contain. Had I been able to spend more of my time in the mesquite growth about the mission, the number of species observed would have been much greater, but unfortunately nearly all of my observations were confined to the dry mesas and barren arroyos farther south where the birds were necessarily very rare.

1. **Anas cyanoptera**. CINNAMON TEAL.—A small flock was started from a mud hole at the mission on April 26. It is very probable that many species of Ducks would be found about the small pools during the winter months.

2. **Ægialitis vocifera**. KILDEER.—At the mission a few of these Plovers were seen on several occasions but never at any other locality. One or two made a practice of visiting the mines every night during April and May, arriving at about 8.30 P.M. and making several circuits of the camp before leaving.

3. **Callipepla californica vallicola**. VALLEY PARTRIDGE.—Very common near the water about the San Fernando mission and a few seen throughout the country. At camp there were two flocks of not less than twenty each that regularly visited the corral to pick up the grain

scattered by the mules. They arrived soon after daybreak each morning, from opposite directions, and after an hour or so departed, lingering about the hillsides on their respective sides of the arroyo until about four o'clock in the afternoon, when another visit was paid the corral and an hour or more devoted to getting supper, after which they departed, all going in the direction from which they came, as fast as their sturdy little legs could carry them, seldom flying even for a few feet unless alarmed. I never knew just how far these birds went to roost or why they left the immediate vicinity of camp, but that they travelled some distance I discovered one evening when returning to camp. I was rather more than a mile from the corral when I saw a flock of Partridges coming toward me from direction of camp, running along the dry arroyo. They were some distance from me and evidently unaware of my presence, and by remaining quietly in the shelter of a large cardoon I had the pleasure of seeing the entire flock file swiftly by, keeping up a series of low conversational notes as they hurried on up the gulch. The last two were shot and all doubts regarding the identity of the flock set at rest when their crops were found filled with barley. I think that nearly all of the Partridges within a radius of two miles of the mine were drawn to that spot by the scattered grain, and were represented in the two flocks daily seen.

4. **Zenaidura macroura**. MOURNING DOVE.—One or two visited the corral occasionally. They were rather more common about the mission but nowhere abundant.

5. **Melopelia leucoptera**. WHITE-WINGED DOVE.—In 1887 I found this species not uncommon about the mission and in the neighborhood of the water holes in June, and its peculiar notes were often heard from the giant cactus and cirios between that point and the gulf. It was not at all common, however, in 1894, only one or two being heard at camp and less than half a dozen seen about the water holes at the mission.

6. **Cathartes aura**. TURKEY VULTURE.—Very abundant everywhere.

In 1887 I found the bones of a recently killed California Vulture (*Pseudogryphus californianus*) at a water hole about twenty miles north of San Fernando, in a country exactly similar to that about the mines, but after questioning a number of the natives, I concluded that its occurrence there must have been very unusual and that this point was probably the limit of its range.

7. **Elanus leucurus**. WHITE-TAILED KITE.—A single bird, which dashed past me, June 12, on the San Carlos mesa, fifteen miles south of the mines, is the only record I have for the species south of Cape Colnett.

8. **Parabuteo unicinctus harrisi**. HARRIS'S HAWK.—In 1887 and 1888, Harris's Hawk was not uncommon between El Rosario and San Carlos, and several were seen about San Fernando. They were uncommon, however, in 1894, only two, or perhaps one pair, were seen about camp and as many more at the mission. A few were nesting in cirios between the mine and the beach. A good many nests of this species and of *Buteo*

were seen in the candle-woods that had sent out branches, and occasionally one was seen in a cardoon, but not often.

9. **Buteo borealis calurus**. WESTERN RED-TAIL.—About as common as the preceding species.

10. **Aquila chrysaëtos**. GOLDEN EAGLE.—Only a single bird was seen, at the water tank south of the mine.

11. **Falco peregrinus anatum**. DUCK HAWK.—In 1887 I found a pair nesting in a cliff near the coast, below San Fernando, and upon visiting the spot in January, 1894, a pair flew from the same ledge. None were seen in the interior.

12. **Falco sparverius deserticolus**. DESERT SPARROW HAWK.—I refer the San Fernando Sparrow Hawk to this race with some hesitancy, no specimens from that region being in my collection. I have taken true *deserticolus* from as far south as Ensenada. Sparrow Hawks were not common in the San Fernando region, only a few being seen about the mission and on one or two occasions at the mines.

13. **Strix pratincola**. AMERICAN BARN OWL.—In 1887 I found a pair of Barn Owls perched on a timber in one of the old wells in the lower San Fernando valley. I think none were seen elsewhere in that locality, nor were any seen during the past season. This species was not uncommon on the upper part of the Rosario water-shed, fifty miles north of San Fernando. They were nesting in the adobe banks along the arroyos and were frequently seen and heard.

14. **Bubo virginianus subarcticus**. WESTERN HORNED OWL.—Rare in the region here embraced. One seen between the mine and the coast, in June, and one or two heard, complete my record.

15. **Speotyto cunicularia hypogæa**. BURROWING OWL.—A few in the more open valleys between the mines and the coast. I closely questioned the Indians of the San Fernando and El Rosario valleys regarding small Owls that might be found living in the holes in the cardoons, hoping to hear of *Megascops* or *Glaucidium*, as everything seemed favorable to their presence, but none of them had seen any small Owls, nor could I find any indications of them.

16. **Geococcyx californianus**. ROADRUNNER.—Quite common about the mines, and much more so near the water holes near the mission.

17. **Dryobates scalaris lucasanus**. ST. LUCAS WOODPECKER.—Abundant about the cardoon and cirio trees but very shy. Young were seen in families of four or five, June 10–20. This species was also not uncommon along the coast and lower foothills as far as San Telmo at least, living in the thickets of pitahaya cactus (*Cereus gummosus*) and nesting in the dry flower stalks of the mescal agave which grows with the cactus. San Fernando and San Telmo skins are indistinguishable from those from Cape St. Lucas.

18. **Melanerpes uropygialis**. GILA WOODPECKER.—The range of this species along the Pacific slope is exactly coëxtensive with that of *Cereus pringlei*, becoming common with that cactus a short distance below

Rosario and seldom if ever being seen at any distance from the shelter of its mighty branches. At the mission, where the cardoons were very large and abundant, to within a short distance of the mesquite thickets, this Woodpecker delighted in making frequent forays into the lesser growth, spending hours in hammering on the mesquite trunks and hunting through their branches, always beating a precipitate retreat to the cactus on the hillsides above at the first sign of danger. My skins from this region show the San Fernando bird to be rather smaller than those from Arizona, with the white markings of the wings and upper parts somewhat restricted. It may seem desirable to separate them as a subspecies, but with the series at present available, I do not consider it advisable.

19. **Colaptes chrysoides.** GILDED FLICKER.— The northwestern range of this species is almost, if not quite, the same as that of the preceding species, which it resembles in habits. The present species shows a greater preference for the cirio than does *Melanerpes*, though it seems equally fond of the cardoons. My series from San Fernando proves it to be quite different from a small series from Arizona, kindly loaned me by Mr. F. Stephens. The ground color of the upper parts is much darker in the Lower California bird, averaging about bistre brown, while the Arizona skins are broccoli brown; the black markings are also more intense and below especially more abundant in the peninsula specimens; the yellow of the wings and tail is deeper and the measurements less than in the Arizona skins. I have unfortunately no skins from the Cape region, whence Malherbe obtained his type of *chrysoides*, and until such skins are examined it would be unsafe to separate either the Arizona or San Fernando birds.

20. **Phalænoptilus nuttalli.** NUTTALL'S POORWILL. — Of the three specimens before me, collected the past season, two are rather intermediate between *californicus* and *nitidus*, although one was collected as far north as Burro Cañon, north of Ensenada. The third, No. 5266, collected at San Fernando May 4, if not true *nitidus*, is not far from that form. Unfortunately none of my skins of that race from New Mexico are accessible at the present writing, and I cannot give them a direct comparison.

Poorwills were not uncommon in all of the desert regions visited the past season. They are probably resident through most of this country, as I have heard them in December and January. During the summer they were heard nearly every evening at San Fernando and doubtless were nesting, but no nests were found.

21. **Chordeiles acutipennis texensis.** TEXAS NIGHTHAWK. — About the mesquite brush and water holes at the San Fernando mission during migration.

22. **Cyseloides niger.** BLACK SWIFT.— A small flock was seen near San Carlos in May, 1887.

23. **Aëronautes melanoleucus.** WHITE-THROATED SWIFT. — A common resident in all of the deserts about San Fernando; especially common

during the nesting season at the mission, where it nests in all of the high cliffs, and possibly in the giant cactus, though I have no evidence of their so doing.

24. **Calypte costæ**. COSTA'S HUMMINGBIRD. — Very common about San Fernando during the summer. I thought I saw *C. anna* on one or two occasions at the mission, but was not sure.

25. **Myiarchus cinerascens**. ASH-THROATED FLYCATCHER. — Very common everywhere about San Fernando; less so near the coast. One was taken January 8, and a few others seen, so that it is probably a winter resident. About the mines they nest in the abandoned Woodpecker holes in the cardoon and cirio trees, and in the dry blossom stalks of the mescal (*Agave shawii*).

26. **Sayornis saya**. SAY'S PHŒBE. — Not uncommon about the water near the mission, and rather common in the dry arroyos until toward the end of the migration. A few were nesting about the mines, one nest being found twenty-five feet below the surface of the ground in one of the shafts.

27. **Sayornis nigrescens**. BLACK PHŒBE. — Only seen about the mission where it was not uncommon.

28. **Empidonax cineritius**. St. LUCAS FLYCATCHER. — One or two were taken near the mine in May and several were found about the mission in the thick mesquite growth. They sought the shelter of the most dense thickets, seldom venturing into the open, and only making their presence known by an occasional low, plaintive call. They were doubtless nesting, but owing to the difficulty of penetrating the dense, thorny tangle no nests were found.

29. **Otocoris alpestris pallida**. SONORAN HORNED LARK. — Quite common in the open country south of San Fernando, and not infrequently seen at the mines.

30. **Corvus corax sinuatus**. AMERICAN RAVEN. — Very common throughout the region.

31. **Sturnella magna neglecta**. WESTERN MEADOWLARK. — Not uncommon during winter at the mission, but very rare, if present, in summer.

32. **Icterus parisorum**. SCOTT'S ORIOLE. — Very common, a few being found in winter. Their nests were frequently seen buried in the short twigs that cover the trunks of the cirio and well protected by the sharp thorns. They are very fond of the ripe fruit of most of the cacti, especially *Cereus gummosus*.

33. **Scolecophagus cyanocephalus**. BREWER'S BLACKBIRD. — A few were probably nesting at the mission, as they were seen until the last of June. Occasionally seen about the corral at the mine.

34. **Carpodacus mexicanus frontalis**. HOUSE FINCH. — A few were found in all of the region traversed, but it was common only about the water holes.

35. **Ammodramus sandwichensis alaudinus**. WESTERN SAVANNA SPARROW. — A few were seen about the corral in January.

36. **Zonotrichia leucophrys intermedia**. INTERMEDIATE SPARROW. — Not uncommon as a winter resident along the arroyo below the mission. One was taken at the mine as late as April 29.

37. **Amphispiza bilineata**. BLACK-THROATED SPARROW. — Very common in the interior and not uncommon on the coast. *A. belli* takes the place, to a large extent, of *bilineata* on the coast, crowding it further inland to the north until at San Quintin I very seldom saw it within ten miles of the beach. In 1887 a nest of *bilineata* was found north of San Fernando which contained four eggs, two of which were fresh and normal. The others, though perfect to all appearances, contained nothing but a small yelk.

38. **Amphispiza belli**. BELL'S SPARROW. — Not seen over four or five miles from the beach in the latitude of San Fernando and not very common.

39. **Melospiza fasciata heermanni**. HEERMANN'S SONG SPARROW. — Common about the mission. In Mr. W. E. Bryant's 'Catalogue of the Birds of Lower California' (Proc. Cal. Acad. Sci., Vol. II) he says, under head of *M. f. samuelis:* "I found them quite common in the large fresh-water swamp at El Rosario and Song Sparrows that I suppose were this form were seen at San Fernando." In a series of Song Sparrows representing nearly all of the country between San Diego and San Fernando I can find nothing that approaches *samuelis*, and though I have no specimens from El Rosario I feel sure that Mr. Bryant must have made a mistake in referring the bird to that race, all of my skins being easily referable to *heermanni*. In the San Fernando *Melospiza* I had expected to find some indication of intergradation with *rivularis*, but in the small series from the mission none show any approach to the characteristics of that race. It is possible that on the eastern side of the peninsula it will be found to intergrade with *fallax*, which extends for an unknown distance down the western side of the Gulf, but in the light of the material at my command I would expect to find *rivularis* a distinct local species.

40. **Pipilo fuscus senicula**.[1] LOWER CALIFORNIAN TOWHEE. — Rare about the mine but more common in the mesquite at the mission.

41. **Habia melanocephala**. BLACK-HEADED GROSBEAK. — Seen only as a migrant and but once or twice.

42. **Calamospiza bicolor**. LARK BUNTING. — A flock seen along the coast between El Rosario and San Fernando in April, 1887.

43. **Progne subis**] **hesperia**. WESTERN MARTIN. — Not uncommon at the mission and an occasional pair was seen in other localities, nesting in Woodpecker holes in the giant cactus.

44. **Petrochelidon lunifrons**. CLIFF SWALLOW. — Common during migration, and occasionally seen as long as I was at San Fernando, but no nesting colonies were found.

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[1] See *antea*, p. 111.

45. **Tachycineta thalassina**. VIOLET-GREEN SWALLOW. — During early May this species was frequently seen at camp. At the mission it was nesting in the cardoons in May and June.

46. **Phainopepla nitens**. PHAINOPEPLA. — Very common about the mine in January, and but little less so on my return in April, but they soon became rare about camp and quite abundant at the mission. About camp their food consisted of the fruit of a mistletoe which was abundant on the cat-claw.

47. **Lanius ludovicianus gambeli**. CALIFORNIA SHRIKE. — Seen occasionally throughout the region but only common at the mission.

48. **Vireo gilvus**. WARBLING VIREO. — Seen only as a migrant. Rare.

49. **Vireo pusillus**. LEAST VIREO. — A few were met with in the mesquites about camp until about May 15, after which I think none were seen or heard. At the mission they were quite common and evidently nesting in the mesquite thickets.

50. **Helminthophila celata lutescens**. LUTESCENT WARBLER. — A few were seen at camp in late April and the first week in May.

51. **Dendroica auduboni**. AUDUBON'S WARBLER. — Everywhere common in winter but nearly or quite all had departed by the time I returned to camp, April 26.

52. **Dendroica townsendi**. TOWNSEND'S WARBLER. — A female which I shot at camp, May 7, is my only record.

53. **Dendroica occidentalis**. HERMIT WARBLER. — At the mission I shot a female May 16 — the only one seen.

54. **Geothlypis trichas occidentalis**. WESTERN YELLOW-THROAT. — A few were heard in a growth of tules about one of the water holes at the mission.

55. **Sylvania pusilla**. WILSON'S WARBLER. — During the spring migration a few were seen in the mesquites about camp.

56. **Oroscoptes montanus**. SAGE THRASHER. — The Sage Thrasher winters in comparative abundance in most of this region and was seen in many places between the mines and the coast in January. All were gone, however, upon my return in April.

57. **Harporhynchus cinereus mearnsi**. MEARNS'S THRASHER. — Quite common about San Quintin and in suitable places as far south as I have collected. (For a fuller account of this subspecies, see Auk, XII, p. 53.)

58. **Harporhynchus redivivus**. CALIFORNIAN THRASHER. — The capture of a specimen at the San Fernando mission somewhat extends the known range of the species. Mr. Bryant in his 'Catalogue of Birds of Lower California' records it from El Rosario upon my authority. At this point it is not uncommon, the extensive brushy valley above the freshwater marshes furnishing surroundings exactly suited to its habits. At San Fernando I found it in small numbers confined to the thickets of mesquite near the water. It was very shy and but a single specimen was secured.

59. **Heleodytes brunneicapillus bryanti**. BRYANT'S CACTUS WREN. — Not uncommon throughout the region but everywhere noticeable for its

extreme shyness. The normal note of the Cactus Wren is quite harsh and unmusical, consisting of a series of notes rapidly uttered in a monotone, but at the mine I once heard one give voice to a song exactly intermediate between the normal, discordant notes of this species and the incomparable song of the Cañon Wren. The full, rich cadence and clear tones of *Catherpes* was very pronounced but not more so than the characteristic *gou-gou-gou* and deeper tones of *Heleodytes*. I was not near enough to secure the bird and before I could get within range it flew further up the mountain where it several times repeated the song that first attracted me. In the description of this race (Auk, July, 1894), the San Fernando Cactus Wrens were referred to *affinis*. The specimens upon which I based my opinion were all winter birds, with the dark markings somewhat obscured by the light, unworn tips of the new plumage. A series of breeding birds prove the San Fernando race to be *bryanti*, though perhaps hardly typical.

60. **Salpinctes obsoletus**. ROCK WREN. — Not uncommon in winter, but rare after my arrival in April.

61. **Catherpes mexicanus punctulatus**. DOTTED CAÑON WREN. — A pair was seen near the coast in June, 1887. One or two were noted near the mission.

62. **Thryothorus bewickii spilurus**. VIGORS'S WREN. — Quite common about the mine as well as at the mission. Several families of young were met with May 15–20.

63. **Psaltriparus minimus californicus**. CALIFORNIAN BUSH-TIT. — Not uncommon about the mesquite thickets in the mission valley; not met with elsewhere.

64. **Auriparus flaviceps**. VERDIN. — Quite common in all of the country south of San Quintin, especially in the mesquite growth. A good many of their nests were found about San Fernando, usually in cat-claw but occasionally in a chola. They are very restless, flying from one bush to another; often seen searching for insects about the blossoms of the cardoons. At such times their actions are very similar to those of the Titmice of the genus *Parus*, hanging head or back downward like a veritable Chickadee, and uttering its clear call note at frequent intervals. Several broods are probably raised, as I found young in the nest from April 24 to the time of my leaving, the last of June.

65. **Polioptila californica**. BLACK-TAILED GNATCATCHER. — Very common about the mine, nesting and probably resident.

ON THE STATUS OF BISCHOFF'S SONG SPARROW (*MELOSPIZA INSIGNIS* BAIRD).

BY CHARLES W. RICHMOND.

SOME time ago Major Chas. E. Bendire, Honorary Curator Department of Oölogy in the United States National Museum, received some eggs of the Aleutian Song Sparrow from Mr. C. Littlejohn of Redwood City, Calif., collected at Sannak Island, Alaska, in the summer of 1894. These eggs proved, upon comparison, to be so much larger than others in the National Museum collection that Mr. Littlejohn was requested to send specimens of the bird for identification, which he very kindly did. At about the same time Mr. B. J. Bretherton of Lincoln, Oregon, sent on two specimens of *Melospiza*, with a small lot of other birds, all from Kadiak Island, which he very generously presented to the National Museum. Upon learning that the Kadiak specimens were not *Melospiza cinerea*, Mr. Bretherton sent a third example for examination, for which I have to thank him. Mr. Littlejohn, at my request, forwarded a series of twenty-seven specimens of *M. cinerea*, all from Sannak Island, for comparison with the large series in the National Museum collection, for which courtesy my thanks are due him. A series of over eighty specimens is now at hand, and amply sufficient, I think, to illustrate the validity of *Melospiza insignis* Baird. Of these specimens, eleven are *insignis*, from Kadiak, and the remainder are *cinerea*, mainly from Unalaska and Sannak Islands. A glance at the Kadiak birds without recourse to measurements will suffice to distinguish them from true *cinerea* from Unalaska, in fact they may readily be identified without direct comparison with the latter, which points strongly in favor or the recognition of *insignis* as a valid race. Its position, as may be inferred from its habitat, is between *rufina* and *cinerea*.

Melospiza insignis, or Bischoff's Song Sparrow, was described by Professor Baird in 1869, from six specimens collected by Ferd. Bischoff at Kadiak Island during that and the preceding year. At that time the *Fringilla cinerea* of Gmelin from Unalaska

was known only from the very vague description of that author, who followed Latham and Pennant. In 1870 the National Museum received two specimens from Dr. J. F. Brandt, who collected them many years before. These specimens, Nos. 60,161 and 60,162, are labeled "Ins. St. Paul, Aug. 5, 1843," and "Ins. Kodiak, 1844," respectively. The specimen collected at "Ins. St. Paul" (doubtless the small village of St. Paul on Kadiak, as the bird is not known to occur on the Pribilof Islands) is *insignis*, but the other, labeled "Ins. Kodiak," is *cinerea*. This latter specimen has no doubt been a stumbling block to those who have worked over these birds in the past, the very few genuine Kadiak examples then in the collection being neutralized by this specimen of *cinerea*. I suspect it to be from Unalaska, or some island on which *M. cinerea* occurs, but erroneously labeled "Kodiak." At the present time I have been able to examine only eleven specimens from Kadiak, but these are all typical of Bischoff's Song Sparrow.

Since 1870 many specimens of *Melospiza cinerea* have been received by the National Museum, collected chiefly by the naturalists attached to the various government vessels sent to Alaska. These specimens are principally from Unalaska, with a few specimens from Adak, Atka and the Shumagins, as above stated, and Mr. Littlejohn has recently obtained a large series from Sannak. This additional material from Unalaska led to the adoption of the name *Melospiza cinerea* (Gmel.) for the Aleutian Song Sparrow, and Baird's *Melospiza insignis* was relegated to the synonomy of that species. This change was made in 1881 by Mr. Ridgway,[1] but Dr. Finsch[2] had previously recognized both forms in his paper on the ornithology of Northwest America. In 1882 Dr. Bean[3] gave a valuable table of measurements of these Song Sparrows, and more recently Turner[4] and Nelson have written on the species; the latter author, after describing the fall

[1] Proc. U. S. N. M., III, 1880, p. 3.

[2] Abhandl. Nat. Ver. Brem., III, 1872, p. 41.

[3] Proc. U. S. N. M., V, 1882, p. 154.

[4] Contr. Nat. Hist. Alaska, 1886, p. 174.

plumage of the adult, observes that "Kadiak birds average slightly darker than those from Unalaska and the Aleutian chain."[1]

Having given this brief history of the case, it now remains to describe *Melospiza insignis*, and point out the features in which it differs from *M. cinerea*.

Melospiza insignis *Baird.*

Description. — (U. S. Nat. Mus. No. 135,093, ♂ ad., Kadiak Island, Alaska, June 6, 1894, B. J. Bretherton.) Upper parts, including upper tail-coverts, slaty gray, the feathers of the interscapular region and scapulars with darker, brownish centres and blackish shaft marks; cervix and rump uniform in color, without markings; top of head darker on sides, with a faint brownish tinge, the feathers with blackish shaft marks. Tail above grayish brown, lighter on outer webs, with a chestnut wash at the base of the outer feathers. Throat, lores, malar stripe, and along median under parts grayish white, passing into dusky slate gray on the sides, cheeks, and sides of neck, with a brownish wash on flanks; sub-malar streak brownish gray, the feathers with darker centres, a faint, narrow rictal patch of the same color, and a faint postocular streak of brown. Throat faintly flecked with small dusky spots. Breast with a distinct band of dusky feathers, each feather edged laterally with dull white, with ill-defined brownish centres; sides streaked with dusky, the streaked feathers with brown along shafts. Under tail-coverts grayish brown, as on flanks, with darker median streaks, each feather edged with dull white. Wing grayish brown, like tail; tertials with lighter, umber edgings on outer webs; greater wing-coverts cinnamon on outer webs, with light gray terminal edgings; edge of wing at carpal joint, white. Wing, 3.18; tail, 3.12; bill from nostril, .44; depth of bill at base, .29; culmen, .55; tarsus, 1.03 inches.

Melospiza insignis differs from *cinerea* in its somewhat smaller size, shorter and more slender bill, in having less strongly marked spots on the interscapular region and breast, and in the gray, rather than brown, color of these spots. It is also without the distinct russet spots on the sides of the neck, at the termination of the sub-malar streak. In the spring specimens of *insignis* there is no lateral crown stripe of russet, but the great majority of specimens of *cinerea* before me show it very plainly. In fresh fall plumage the specimens of *insignis* have a dull lateral head

[1] Rep. Nat. Hist. Alaska, 1887, p. 194.

stripe of Prout's brown, with narrow black shaft streaks; *cinerea* in corresponding plumage has these stripes more distinct, and of a burnt umber color. Kadiak birds have less white below than most specimens of *cinerea*, and the whole plumage is a shade darker. The specimens of *cinerea* from the various localities represented are quite uniform in coloration, but the size varies slightly, those from Sannak leaning somewhat toward *insignis* in the slender shape of the bill, although the measurements slightly exceed those of the Unalaska individuals. In this connection it may be mentioned that two examples from Cook's Inlet on the mainland (Nos. 81,380 and 131,730) approach *insignis* much closer, both in color and size, than individuals of *rufina* from Sitka, and it may be found necessary, upon the examination of more material from this region, to either merge these birds into *insignis*, or separate them from *rufina* under a new title. Finsch's Alexandrovsk specimen is probably similar to these mainland birds. Measurements of the two specimens mentioned will be found following those of *M. insignis* in the following summary.

Measurements of **Melospiza cinerea** (*Gmel.*).

Average of twelve adult males from Unalaska: wing, 3.29; tail, 3.27; tarsus, 1.11; bill from nostril, .47 inches.

Average of ten adult females from Unalaska: wing, 3.20; tail, 3.17; tarsus, 1.09; bill from nostril, .46 inches.

Average of twelve adult males from Sannak: wing, 3.33; tail, 3.25; tarsus, 1.13; bill from nostril, .48 inches.

Average of ten adult females from Sannak: wing, 3.11; tail, 3.03; tarsus, 1.09; bill from nostril, .47 inches.

Measurements of **Melospiza insignis** *Baird.*

Average of four adult males from Kadiak: wing, 3.23; tail, 3.19; tarsus, 1.04; bill from nostril, .47 inches.

Average of three adult females from Kadiak: wing, 3.04; tail, 2.94; tarsus, 1.05; bill from nostril, .46 inches.

Average of four adults (sex unknown) from Kadiak: wing, 3.13; tail, 3.12; tarsus, 1.05; bill from nostril, .43 inches.

Smallest Unalaska example of *M. cinerea*, adult ♂: wing, 3.21; tail, 3.16; tarsus, 1.11; bill from nostril, .45; depth of bill at base, .31 inches.

Smallest Kadiak example of *M. insignis*, adult ♂: wing 3.18; tail, 3.12; tarsus, 1.03; bill from nostril, .44; depth of bill at base, .29 inches.

Measurements of **Melospiza f. "rufina"** *from Cook's Inlet, Alaska.*

No. 81,380, ♀ adult: wing, 2.97; tail, 2.80; tarsus, .97; bill from nostril, .43 inches.

No. 131,730, ♂ adult: wing, 3.12; tail, 2.90; tarsus, 1.05; bill from nostril, .43 inches.

Turning now to the eggs of these birds, it appears that previous to the receipt of the Sannak Island specimens, the eggs in the National Museum collection were those of *insignis*, and so, when the Littlejohn specimens were compared with them the difference in size at once became apparent. Major Bendire has very kindly placed at my disposal the following measurements and descriptions of the eggs of both species.

Eggs of **Melospiza cinerea.**

"No. 27,124. Four eggs taken May 26, 1894, measure 1.02 × .70; 1.01 × .71; .97 × .71; .96 × .71 inches. From Chase Littlejohn, Sannak Island.

"No. 27,416. Four eggs taken May 20, 1894, measure 1.00 × .69; .98 × .70; .97 × .69; .97 × .69 inches. Same collector and locality. Ralph Collection.

"No. 27,417. Four eggs taken May 26, 1894, measure .95 × .67; .96 × .66; .90 × .66; .91 × .65 inches. Same collector and locality. Ralph Collection.

"Average about .96 × .68 inches.

"*Description.*—Eggs elliptical ovate in shape, the shell compact and smooth, without lustre. Ground color from a bright light green to a pale grayish-green, mostly heavily blotched and spotted, especially about the larger end, with ferrugineous and lavender, in some specimens heavy enough to almost hide the ground color."

Eggs of **Melospiza insignis.**

"No. 19,076. A set of three eggs taken June 10, 1880, by Dr. T. H. Bean at St. Paul, Kadiak, Alaska, measure .89 × .65; .87 × .65; .88 × .66 inches.

"No. 19,070. An incomplete set of two eggs taken by Mr. W. J. Fisher, in July, 1883, on Kadiak Island, Alaska, measure .87 × 65; .89 × .67 inches.

"No. 19,074. A set of three eggs from the same collector and place, measure .91 × .68; .94 × .68; .94 × .66 inches.

"No. 26,214. A set of five eggs from Kadiak Island, taken by Mr. B. J. Bretherton (from the collection of the Dept. Agriculture), measure .90 × .67; .90 × .67; .87 × .67; .86 × 66; .84 × .66 inches.

"Average about .89 × .66 inches.

"*Description.*—These eggs vary from ovate to short ovate in shape. They are considerably smaller than those of *M. cinerea*, but are similarly marked, and resemble them otherwise except in size."

In the synonomy which follows, I have placed three references to *Emberiza unalaschcensis* under *M. cinerea*, for the following reasons: our specimens collected by Brandt are both labeled "*Emberiza unalaschkensis*," presumably by Brandt himself. Dr. Finsch,[1] in an explanation of the unpublished plates of Brandt's 'Descriptiones et Icones Animalium Rossicorum Novorum,' writes "Tab. II, f. 4, *Emberiza unalaschcensis* ist *Melospiza cinerea*, Gmel. — Unalaschka." It appears that Brandt referred to *Melospiza cinerea* under this name, instead of to *Passerella iliaca unalaschcensis* (Gmel.). The reference to Brandt's posthumous paper, edited by Schalow[2] doubtless also belongs here.

Melospiza insignis *Baird.*

Melospiza insignis BAIRD, Trans. Chicago Acad. I, 1869, p. 319, pl. 29, fig. 2. [Kadiak.] — DALL. & BANN., Trans. Chicago Acad. I, 1869, p. 285. — ? FINSCH, Abhandl. Nat. Ver. Brem. III, 1872, p. 44. [Alexandrovsk.] — HENSH. Bull. N. O. C. IV, 1879, p. 159 (part).

Zonotrichia (*Melospiza*) *insignis* GRAY, Hand-List Bds. II, 1870, p. 94, no. 7392.

Melospiza melodia var. *insignis* COUES, Key N. A. Bds. 1872, p. 140. — BAIRD, BREW. & RIDGW. Hist. N. A. Bds. II, 1874, p. 30, pl. 27, fig. 8 (part).

Melospiza melodia h. insignis COUES, Bds. N. W. 1874, p. 139 (part).

Melospiza cinerea RIDGW. Proc. U. S. N. M. III, 1880, pp. 3, 180 (part). — COUES, Check-List, 1882, p. 54 (part). — BEAN, Proc. U. S. N. M. V. 1882, pp. 154, 172 (part). — NELSON, Cruise 'Corwin,' 1883, p. 72 (part). — COUES, Key N. A. Bds. 2nd ed. 1884, p. 372 (part). — A. O. U. Check-List, 1886, p. 281 (part). — TURNER, Contr. N. H. Alaska, 1886, pp. 174, 194 (part). — NELSON, Rept. N. H. Alaska, 1887, p. 193 (part). — RIDGW. Man. N. A. Bds. 1887, p. 432 (part). — SHARPE, Cat. Bds. B. M. XII, 1888, p. 707 (part). — RIDGW. Proc. U. S. N. M. XVI, 1893, p. 664.

Melospiza cinerea (*Gmelin*).

Cinereous Finch LATH. Syn. Bds. II, pt. I, 1783, p. 274. [Unalaska.] — PENN. Arct. Zool. II, 1785, p. 378.

Fringilla cinerea GMEL. Syst. Nat. I, 1788, p. 922. — LATH. Ind. Orn. I, 1790, p. 445.

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[1] Abhandl. Nat. Ver. Bremen, III, 1872, p. 20.

[2] Journ. f. Orn., 1891, p. 256.

Zonotrichia cinerea GRAY, Gen. Bds. II, 1849, p. 373. — BONAP. Consp. Gen. Av. I, 1850, p. 478.

Melospiza insignis DALL, Proc. Cal. Acad. Sci. V, 1873, p. 27. [Unalaska; Shumagins.] *Ibid.*, 1874, p. 274. [Kyska.] — HENSH. Bull. N. O. C. IV, 1879, p. 159 (part).

Melospiza melodia var. *insignis* BAIRD, BREW. & RIDGW. Hist. N. A. Bds. II, 1874, p. 30 (part).

Melospiza melodia h. insignis COUES, Bds. N. W. 1874, p. 139 (part).

Melospiza cinerea FINSCH, Abhandl. Nat. Ver. Brem. III, 1872, pp. 20, 41. [Unalaska.] — RIDGW. Proc. U. S. N. M. III, 1880, pp. 3, 180 (part). — COUES, Check-List, 1882, p. 54 (part). — BEAN, Proc. U. S. N. M. V, 1882, pp. 154, 172 (part). — NELSON, Cruise 'Corwin,' 1883, p. 72 (part). — COUES, Key N. A. Bds. 2nd ed., 1884, p. 372 (part). — TURNER, Auk, II, 1885, p. 157. [Nearer Islands.] — A. O. U. Check-List, 1886, p. 281 (part). — TURNER, Contr. N. H. Alaska, 1886, pp. 174, 194 (part). — NELSON, Rept. N. H. Alaska, 1887, p. 193 (part). — RIDGW., Man. N. A. Bds., 1887, p. 432 (part). — SHARPE, Cat. Bds. B. M. XII, 1888, p. 707 (part).

Emberiza unalaschcensis BRANDT, Descr. Anim. Ross. pl. II, fig. 4. — FINSCH, Abhandl. Nat. Ver. Brem. III, 1872, p. 20. — SCHALOW, J. f. O. 1891, p. 256. [Unalaska.]

THE SUMMER RANGE OF COLORADO BIRDS.

BY W. W. COOKE.

NO OTHER State in the Union has so great a variety of birds as Colorado. This arises from its location at the meeting place of eastern and western forms. The continental divide passes through the middle of the State, and while the plains of the southeast offer a fit habitation for most of the Mississippi Valley birds, the western slopes are visited by most of the Pacific coast species. Many southern birds reach Colorado during the heat of summer and most of the northern birds can be found on her mountains in winter. Such a combination of location and topography results in a widely varied bird fauna. There has not been much study made of Colorado ornithology, but up to date the State list includes 347 species. The general character of the fauna is western as shown by the fact that

there are only 60 eastern birds found here, meaning by eastern, those that are generally distributed in the East and extend only to the Rocky Mountains; while there are 90 species of western birds found here that do not occur to the eastward, in addition to 22 species that are peculiar to the Rocky Mountains, and 13 species that reach Colorado from the southwest. The remainder of our State's quota is made up of 16 species from the north, 17 from the south, 2 from the southeast, and 127 species that are of general distribution throughout the United States.

It is not, however, of Colorado bird-life as a whole that it is intended to speak, but of the summer birds. It is at this time of year that the mountainous character of the surface exerts the greatest influence on bird life. This can be shown most easily by a comparison with the prairie States to the eastward. The State list of Kansas numbers 335 species, of which 175 are known to breed in the State. Illinois, from about an equal number of species, shows 205 breeders. This large proportion of nesting species is due to the great extent of Illinois north and south. The same result is reached in Colorado through the effect of the mountains. Out of 347 species known to the State, 236 have been already ascertained to breed within her limits, and it is probable that almost one-half of the remainder will some day be added to the list of breeders. In broad terms it can be stated, that few birds occur in the State at any season of the year that are not also found there in summer. And why should it not be so. In a prairie State, the great bulk of the winter and early spring birds pass on northward to find a cool climate suitable to their nature and inclination. What these birds obtain by a northward journey of a thousand miles, their western cousins in Colorado duplicate by a trip of less than one-twentieth the distance. The everlasting snows lie on about one hundred peaks of the Colorado mountains, and in their vicinity the hardiest birds can find congenial summer homes. The converse is also true; each of the widely varied portions of the State, at any and all seasons of the year, is inhabited by a goodly variety of birds. There is a climate for each bird and a bird for each climate. One would expect to find bird-life in May

among the blooming peach trees of the Colorado Valley, but at the same time there would be found almost as great a variety of birds, and nearly as many individuals, along the edges of the snow banks high up in the mountain sides. When in July we climbed Long's Peak (over 14,000 feet high, almost the highest in the State), having to wade through snow for twenty-five hundred feet of the way, we found a Brown Leucosticte (*L. australis*) on top waiting to receive us. The snow was covered with bird tracks, showing that our host was not the only inhabitant of the peak. What could be found there for a seed-eating bird to live on is a mystery, for the nearest vegetation was two thousand feet below, and another thousand to the nearest trees. Half an hour later we were caught in a terrific hail storm, and we sighed for the wings of our little friend to bear us to the sunlit fields we could occasionally catch glimpses of below us.

There yet remains an immense amount of work to be done to ascertain the limits of the range of the different species during the breeding season. Each kind seems to be a law unto itself, and it is not safe to judge from one species what will be the breeding range of even closely allied species. The common Raven is found from the foothills to the tops of the highest peaks, while the White-necked Raven, so similar as to be scarcely distinguishable unless in hand, never climbs even to the base of the main range. The Rocky Mountain Bluebird nests indiscriminately from the plains to the uppermost edge of timber, while the western form of the common Bluebird never goes above the lower parks. The Brown Creeper remains throughout the year high up on the mountain sides near the upper limit of timber, while the Cañon Wren remains continuously five thousand feet lower in the rocky cañons that are the source of its name. The Red-shafted Flicker deserts the mountains in the winter and becomes a common bird of the plains, but with the return of spring it ascends the peaks and sometimes nests even above timber line. The barren wastes near the tops of the tallest peaks are inhabited in summer by birds of widely different characters. The Brown Leucosticte, already mentioned, the Brown Lark (*Anthus ludovicianus*) and the White-tailed Ptarmigan (*Lagopus leucurus*) nest in close proximity two thousand feet

above the nearest trees. But how different the winter range of these three species. The Ptarmigan remains as high up as it can get food, being slowly forced downward by the autumnal gales, but finding a precarious living through the winter on the spruce buds along the upper edge of the timber, 11,000 feet above the sea. The Sparrow is found from timber line to the lower part of the foothills; while the Lark deserts the mountains and even the whole State to seek warmer quarters in the south.

The surface of Colorado can be divided into several distinct areas. In the eastern part is a wide stretch of plain from 4000 to 5000 feet elevation above the sea; then come ranges of foothills, 5000 to 7000 feet high. The 'parks' are broad areas of rolling prairie at an elevation of 7000 to 9000 feet, lying between the main ranges of mountains. Around them are the mountain sides clothed with timber to about 11,000 feet, while higher up are the treeless summits. Thus we have in Colorado, the plains, the foothills, the parks, the timbered mountain sides and the barren summits. Each of these during summer has its own peculiar bird-life. The number of individual birds on the plains is much greater than elsewhere. But bird-life in Colorado at best is not nearly so numerous as in the Mississippi Valley at the same latitude. There is a greater variety of birds among the foothills, but not so many individuals as on the plains. The great bulk of these plains birds is made up of a few species. The most common are the Western Meadowlark, the Mourning Dove, Red-winged Blackbird, Say's Phœbe, Bullock's Oriole, Killdeer, American Goldfinch, Shore Lark, Western Lark Finch, Lark Bunting, Eave Swallow, Rocky Mountain Bluebird, and Black-headed Grosbeak.

These all extend up on the foothills and have added to them many species of timber birds, such as the Rock Wren, Magpie, Long-crested Jay, and Lewis's Woodpecker. Most of the birds of the plains occur also in the parks, but their numbers are greatly decreased. These parks seem especially adapted to support bird-life, but there are probably not one-fourth as many individuals per square mile as on the plains near the foothills. The most common birds of the plains become rare in the parks. noticeably the Western Meadowlark, Mourning Dove, Say's Phœbe and

the Lark Bunting. The higher you climb on the mountain sides, the stiller the woods become. A great many different species occur, but their numbers are so small that the woods are almost as silent as the White Mountains of New England.

The following statistics will show the distribution of Colorado birds during the breeding season: —

BREEDING RANGE.

From the plains	to	5000	feet,		29	species.
"	"	"	"	6000	12	"
"	"	"	"	7000	17	"
"	"	"	"	8000	26	"
"	"	"	"	9000	7	"
"	"	"	"	10000	16	"
"	"	"	"	11000	18	"
"	5000	feet	"	6000	2	"
"	"	"	"	7000	4	"
"	"	"	"	8000	13	"
"	"	"	"	9000	8	"
"	"	"	"	10000	5	"
"	"	"	"	11000	7	"
"	6000	"	"	7000	17	"
"	"	"	"	8000	5	"
"	"	"	"	9000	2	"
"	"	"	"	10000	2	"
"	"	"	"	11000	4	"
"	7000	"	"	10000	6	"
"	"	"	"	11000	6	"
"	8000	"	"	8500	5	"
"	"	"	"	10000	5	"
"	"	"	"	11000	4	"
"	9000	"	"	9500	3	"
"	"	"	"	11000	1	"
"	10000	"	"	10500	1	"
"	"	"	"	11000	4	"
"	11000	"	"	11500	3	"
"	12000	"	upward		4	"

This table can be combined into the following statements: —

Total breeders in the State,	236	species.
Breeding only on the Plains,	29	"
Breeding above 5000 feet and upward,	207	"

Breeding above 6000 feet and upward,							193 species.
"	"	7000	"	"	"		155 "
"	"	8000	"	"	"		106 "
"	"	9000	"	"	"		86 "
"	"	10000	"	"	"		51 "
"	"	11000	"	"	"		40 "
That do not breed below 5000 feet,							101 species.
"	"	"	"	"	6000	"	72 "
"	"	"	"	"	7000	"	42 "
"	"	"	"	"	8000	"	30 "
"	"	"	"	"	9000	"	16 "
"	"	"	"	"	10000	"	11 "
"	"	"	"	"	11000	"	7 "
"	"	"	"	"	12000	"	4 "
Breeding at 5000 feet,							164 species.
"	"	6000	"				165 "
"	"	7000	"				163 "
"	"	8000	"				139 "
"	"	9000	"				94 "
"	"	10000	"				79 "
"	"	11000	"				47 "

As before remarked, the birds of Colorado, especially as to their breeding range, have been but little studied, and any eastern ornithologist who wishes to combine collecting and investigation with recreation and a new supply of health can find no better field for his summer outing than the parks and peaks of the Rocky Mountains of Colorado.

ADDITIONAL CHARACTERS OF THE MACROPTERYGIDÆ.

BY FREDERIC A. LUCAS.

IN 'The Auk' for January, 1889, I proposed the family *Dendrochelidonidæ* for the reception of the Tree Swifts of Malaysia, establishing it upon well-marked characters found in the cranium and shoulder-girdle. Unfortunately I was not then aware that

the name *Dendrochelidon* was preoccupied, but since the proper generic name of the Tree Swifts is *Macropteryx*, the family name should be *Macropterygidæ*. By the courtesy of Dr. Sclater I have been able to examine an alcoholic specimen of *Macropteryx coronata*, and can now add three important differential characters to those already given. These are as follows: —

	Micropodidæ.	*Macropterygidæ.*
Hypotarsus	simply grooved	with one tendinal foramen.
Shoulder-muscles	strictly Cypseline	Passerine.
Deep plantars	strictly Cypseline	characteristic.

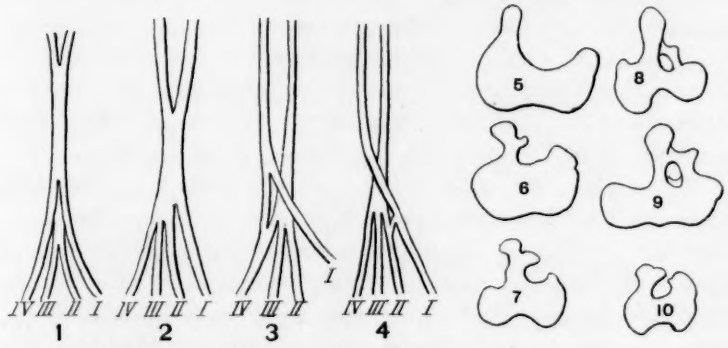
The accompanying figures bring out these points more clearly than any descriptions and show some other points of interest as well. The plantars of *Macropteryx* differ from those of the other Swifts in being almost free from one another, curiously enough very nearly resembling those of *Apteryx*. The extent of their anastomosis resembles that of the Trochilidæ, but in *Macropteryx* the *flexor longus hallucis* is connected with that branch of the *flexor perforans digitorum* which runs to the fourth digit, while in the Hummingbirds it is connected with the branch to the second digit, much as in the Falconidæ. The modifications of the hypotarsus among the Swifts show that the farther a species departs from the typical Cypseline form the more sharply are the tendons differentiated from each other. Thus while all the plantar tendons of *Micropus* play in a common groove, in *Cypseloides* and *Chætura* they are separated by little ridges of bone, and finally, in *Macropteryx* the *flexor perforans digitorum* is honored with a special foramen, just as among the Hummingbirds.

The subject of tendinal individuality and tarsal perforations is extremely interesting, and some day I hope to publish some of the results I am slowly gathering in. These seem to indicate that for morphological characters we must look to the upper end of the tarsus, the distal extremity being particularly subject to physiological adaptations.

The tongue and alimentary canal of all Swifts examined agree with one another in their general characters, and the tongue is very much as it is found among the Swallows, or even in such a

form as *Procnias*, this organ being very susceptible to modifications dependant on food or mode of feeding.

In my previous paper I said that the differences between the Macropterygidæ and the other Swifts were as great as those between the Crows and Swallows; in this I am prepared to go farther and to say that they are greater than those existing between any two families of Passeres with which I am acquainted.



EXPLANATION OF FIGURES.

Deep plantar tendons of 1, *Tachornis gracilis*; 2, *Chætura pelagica*; 3, *Macropteryx coronata*; 4, *Florisuga mellivora*.

Proximal end of left tarsus of 5, *Micropus apus*; 6, *Chætura pelagica*; 7, *Cypseloides niger*; 8, *Campylopterus hemileucurus*; 9, *Macropteryx coronata*; 10, *Tachornis gracilis*.

NOTES ON CERTAIN FLYCATCHERS OF THE GENUS *EMPIDONAX*.

BY WILLIAM BREWSTER.

GREEN-CRESTED FLYCATCHER. **Empidonax virescens** (VIEILL.).

The name *Empidonax acadicus* has been so long established and so generally used that despite its obvious inappropriateness it is indeed a pity that it must be discarded. But there is apparently no alternative, as can be shown in a few words. The

Muscicapa acadica of Gmelin (Syst. Nat., I, 1788, p. 947) was based on the "Lesser-Crested Flycatcher" of Pennant (Arctic Zoology, II, 1785, p. 386, n. 268) and the former author's diagnosis is an almost literal translation into Latin of the latter's description which is as follows: —

"268. LESSER-CRESTED. FL. With a small backward crest: head, neck, and back, of a dirty light cinereous green: breast and belly whitish, tinged with yellow: wings and tail dusky; coverts crossed with two bars of white; secondaries edged with white: legs black. PLACE. Inhabits *Nova Scotia.* — Capt. *Davies.*"

This characterization is obviously too vague and general to be determinable. It fits *E. traillii* quite as well as *E. acadicus*, and it can be applied without much violence to autumnal specimens of *E. minimus*. Of course doubts on this score have been long since acknowledged and expressed; nor would they alone at this late day justify any serious question of the established application of the name *acadica* — an application which has become fixed and current by a certain process of exclusion and by long usage — were it not that we now know definitely what was only half suspected by the ornithologists of the past generation, viz., that the so-called "Acadian Flycatcher" is not a bird of "Acadia" at all. On the contrary, its normal range along the Atlantic seaboard does not extend to the northward of Long Island, although there are, of course, two or three records of its chance occurrence in southern New England. This being the case it would seem to be no longer possible to maintain that this southern *Empidonax* could have been the original *Muscicapa acadica*, for both Pennant and Gmelin name only Nova Scotia as the habitat of their bird, and the mention by the former of the person — Captain Davies, — from whom apparently he received his specimen, gives his statement as to its origin a certain definiteness which allays any suspicion that a mistake may have been made on this point.

These considerations would seem to make it imperative to select another name for the bird which has been so long called *Empidonax acadicus*. The earliest name available is apparently *Platyrhynchos virescens* Vieillot (Nouv. Dict. d'Hist. Nat., XXVII, 1818, 22) based on Wilson and hence unmistakably referable

to this species. Wilson's name, *Muscicapa querula* (Am. Orn., II, 1810, p. 77, pl. 13, f. 3), is, of course, still earlier, but it is preoccupied by *Muscicapa querula* [= *Contopus virens*] Vieillot (Ois. Am. Sept., I, 1807, p. 68, pl. 39). Dr. Coues has said (Birds N. W., 1874, p. 250) that "if *acadica* be set aside as indefinite or inapplicable" it will be necessary to take, "if belonging here," *Muscicapa subviridis* Bartram, but this is a mere "*nomen nudum.*"

Should these conclusions be granted and *Empidonax acadicus* of recent American writers become *Empidonax virescens* (Vieill.), it would also seem advisable to change the name Acadian Flycatcher to Green-crested Flycatcher, for the bird was generally known to the earlier American ornithologists as the Small Green-crested Flycatcher.

TRAILL'S FLYCATCHER. **Empidonax traillii** (AUD.).

The breeding range attributed to this Flycatcher has puzzled ornithologists not a little, — and with good reason, for east of the Alleghany Mountains the bird appears to be practically confined to the Canadian fauna, whereas in the Mississippi Valley it breeds at least as far south as southern Illinois; in the one case associating (in a faunal sense) with such northern birds as Swainson's Thrushes, Winter Wrens, Canada Jays and Three-toed Woodpeckers, in the other with such southern forms as Carolina Wrens, Tufted and Carolina Titmice, Cardinal and Blue Grosbeaks and Bachman's Sparrow. I have long suspected, however, that the Traill's Flycatcher of Ohio, Indiana and southern Illinois is not the same bird as that which breeds in northern New England, and a recent examination of the material in the collection of the United States National Museum and Department of Agriculture has confirmed this impression which, it may be added, is now shared by Mr. Ridgway, Dr. Merriam and Capt. Bendire, who have also given the matter careful attention.

I did not at first suppose that the question affected more than the identification of certain of the Mississippi Valley specimens, but it proves to have a broader significance, as will be presently shown. The type locality of *Muscicapa traillii* Aud. was the

"prairie lands of the Arkansas river" (Orn. Biog., Vol. I, 1831, p. 236). Fortunately three of Audubon's specimens, given by him many years ago to Professor Baird and labeled by Mr. Ridgway as the types of *E. traillii*, are preserved in the National Museum. They are numbered respectively 960, 1865 and 2039. The first two are old birds, the last is a young bird in the first plumage. Although they bear no records of locality Mr. Ridgway thinks that there is practically no doubt that they were collected by Audubon himself on the Arkansas River. In any case they may be regarded as authentic representatives of Audubon's species and since they agree closely in every respect with a number of summer specimens from Ohio and southern Illinois, it seems fair to assume that the Flycatcher which breeds throughout the central portions of the Mississippi Valley is the true *E. traillii*. On comparing it with a large series of *E. pusillus* from west of the Plains, I fail to find any differences by which the two may be separated. It is true that *pusillus* is subject to a good deal of what appears to be local variation and that some of its representatives from west of the Plains are larger and grayer than any of the Mississippi Valley skins, but others are positively indistinguishable from the latter. Considered as a whole the series of breeding birds which I have examined from the United States at large, west of the Alleghanies and south of the 42nd parallel, may be regarded, without much violence, as belonging to one and the same form.

The name which this form should bear is a matter of some uncertainty for although *Platyrhynchus pusillus* Swainson antedates *Muscicapa traillii* Audubon by several years it is not determinable by Swainson's original description (Syn. Mex. Birds, Phil. Mag., I, 1827, p. 366). In the Fauna Boreali-Americana (Part second, 1831, pp. 144–146) this author describes and figures under the name "*Tyrannula pusilla* (Swainson)" a Flycatcher taken at "Carlton House, lat. 53° N., May, 1827," which he says is smaller than the *T. querula* of Wilson [= *Empidonax virescens* (Vieillot)] "particularly in the bill, which is rather broader towards the middle, although formed on the same model," and in respect to the wings which "are much shorter" measuring "only 2 inches" in length. He

also says "before we had investigated the natural affinities of the Flycatchers, we described this bird as possibly belonging to the genus *Platyrhynchus*. . . . A fine specimen in our collection from the shores of Mexico agrees with that brought home by the Expedition." The Mexican specimen here referred to must have been the type of *Platyrhynchus pusillus*, and the specimen "brought home by the Expedition" the bird killed at Carlton House in 1827. If Swainson's statement that the two were practically identical can be trusted it becomes more than ever doubtful if the name *pusilla* has been correctly applied, for, as Baird has hinted (Birds N. A., 1858, p. 195), and Coues definitely suggested (Birds N. W., 1874, p. 252 — under synonomy of *E. pusillus*), there are some reasons for believing that the description and figure given in the Fauna Boreali-Americana may have related to *E. minimus*. At all events they cannot be referred with any degree of confidence to either *E. traillii* or the so-called *E. pusillus*. It is said, however, that some of Swainson's types are still preserved at Cambridge, England. If the type of his *Platyrhynchus pusillus* is among them it should be re-examined with especial reference to the question here involved. But until this has been done by some one who is familiar with the nice distinctions which must be relied on to determine our North American *Empidonaces* it seems to me that we are justified in ignoring the name *pusillus* and adopting — or rather retaining — that of *traillii* for the Flycatcher which we have just been considering.

Empidonax traillii alnorum, new subspecies. ALDER FLYCATCHER.

Subspec. char.— Differing from *E. traillii* (*i. e.*, *E.* "*pusillus*" of Baird and subsequent authors) in having the coloring of the upper parts richer and more olivaceous, the wing bands yellower and hence more conspicuous, the bill decidedly smaller and the legs rather shorter. Type No. 1367, collection W. B., ♂ ad., Upton, Maine, June 3, 1872.

There is of course nothing new about this separation or the characters on which it is based. Indeed, all of the latter — as

well as certain others which I have been unable to verify and for this reason have omitted—were pointed out by Baird, in 1858 (Birds N. A., 1858, pp. 194, 195) and they have been restated more or less fully by innumerable subsequent writers. It is simply a case of renaming a bird which was accurately distinguished nearly forty years ago and has since passed current as a valid form but to which the name of the very bird from which it was intended to separate it has been inadvertently applied.

Baird apparently did not have the Audubonian specimens before him when he made the comparison of *traillii* and *pusillus* above referred to. At least he does not allude to them in the text nor are they included in his tabular lists. The series of what he considered to be true *traillii* comprised nine examples, of which one came from New Hampshire, seven from Carlisle, Pennsylvania, and one from Mexico. The Carlisle birds were all taken in May and were unquestionably migrants on their way to northern New England or New York. Hence it is evident that his impressions of *traillii* were based on material which did not really represent that bird.

I must confess to a certain sense of relief that, as has been just shown, the responsibility for the above separation rests mainly on shoulders other and broader than mine; for while I honestly believe it to be based on intrinsically sound characters, the differences between the two birds in question are, after all, so slight and so difficult of verification without the aid of large series of specimens for comparison that the identification of individual specimens by descriptions alone is an almost hopeless task. This, however, is by no means a novel condition among *Empidonaces*, for this puzzling group includes several forms which are positively known to be distinct species, but which in the dried skins cannot always be distinguished with either ease or certainty.

The respective breeding ranges of *E. traillii* and *E. t. alnorum* cannot be mapped at present with entire precision, but I have had no hesitation in referring to the former all the breeding specimens that I have examined from the Mississippi Valley south of the 42nd parallel of latitude, and from North America at large west of the Plains, including skins from Fort Resolution on Great Slave

Lake, Fort Simpson on the Mackenzie River, Nulato on the upper Yukon, and British Columbia.

E. t. alnorum breeds in the Maritime Provinces, New England and New York, the northern part of the Lower Peninsula of Michigan (I have several typical specimens from Oden which is situated about twenty miles south of the Straits of Mackinac), and doubtless at many other points in the region lying immediately about the Great Lakes, but just how far to the westward it extends and whether or not its breeding range in the Mississippi Valley reaches sufficiently far southward to impinge on or closely approach that of true *traillii*, I am wholly ignorant.

SEVENTH SUPPLEMENT TO THE AMERICAN ORNITHOLOGISTS' UNION CHECK-LIST OF NORTH AMERICAN BIRDS.

SINCE the publication of the Sixth Supplement to the A. O. U. Check-List the Committee on Classification and Nomenclature of North American Birds has held two sessions, having in hand the preparation of a new edition of the Check-List, as well as current questions relating to species and subspecies, and to changes in nomenclature proposed since the preparation of its last report (*cf.* Auk, XI, 1894, pp. 46–51). The sessions of the Committee were held in Washington, Jan. 15–18, 1894, and Feb. 12, 13, 1895, all the members of the Committee being present. In view of the proposed early publication of the second edition of the Check-List, all questions known to the Committee were considered, including nearly all of those originating in the present (April) number of 'The Auk.' Some of the latter still await final action.

The numbers at the left of the scientific names facilitate collation with the Check-List. The interpolated species and subspecies are numbered in accordance with the provision made therefor in the Code of Nomenclature (p. 14, last paragraph).

Committee { ELLIOTT COUES, *Chairman.*
J. A. ALLEN.
WILLIAM BREWSTER.
C. HART MERRIAM.
ROBERT RIDGWAY.

I. ADDITIONS.

[388.1.] **Cuculus canorus telephonus** (HEINE).

Kamtschatkan Cuckoo.

Cuculus telephonus HEINE, Journ. f. Orn. 1863, 352.
Cuculus canorus telephonus STEJN. Bull. 29, U. S. Nat. Mus. 1885, 224.

[B—, C—, R—, C—.]

HAB. An Asiatic species, occurring accidentally at the Pribilof Islands. (*Cf.* PALMER, Auk, XI, Oct. 1894, 325.)

[390.1.] **Ceryle torquata** (LINN.).

Ringed Kingfisher.

Alcedo torquata LINN. Syst. Nat. 1766, I, 180.
Ceryle torquata BOIE, Isis, 1828, 316.

[B—, C—, R—, C—.]

HAB. Mexico and southward to southern South America. Casual on the Lower Rio Grande, Texas. (*Cf.* STONE, Auk, XI, April, 1894, 177.)

441.1. **Basilinna leucotis** (VIEILL.).

White-eared Hummingbird.

Trochilus leucotis VIEILL. Ency. Méth. II, 559.
Basilinna leucotis BOIE, Isis, 1831, 546.

[B—, C—, R—, C—.]

HAB. Mexico and Guatemala, north to Chiricahua Mountains, Arizona. (*Cf.* FISHER, Auk, XI, Oct. 1894, 325.)

480.1. **Aphelocoma cyanotis** RIDGW.

Blue-eared Jay.

Aphelocoma cyanotis RIDGW. Man. N. Am. Bds. 1887, 357.

[B—, C—, R—, C—.]

HAB. Northern Mexico, ranging northward into western Texas. (*Cf.* FISHER, Auk, XI, Oct. 1894, 327.)

591 *c*. **Pipilo fuscus senicula** ANTHONY.

Anthony's Towhee.

Pipilo fuscus senicula ANTHONY, Auk, XII, April, 1895.

[B 396, *in part*, C 206 *b*, *in part*, R 240 *b*, *in part*, C 308, *in part*.]

HAB. Southern California, and Lower California, south to Lat. 29°.

632 *b*. **Vireo huttoni obscurus** ANTHONY.

Dusky Vireo.

Vireo huttoni obscurus ANTHONY, Zoe, I, Dec. 1890, 307.

[B—, C—, R—, C—.]

HAB. Pacific coast, from Oregon to southern British Columbia, south in winter to California.

682.1. **Geothlypis poliocephala ralphi** RIDGW.

Rio Grande Yellow-throat.

Geothlypis poliocephala ralphi RIDGW. Proc. U. S. Nat. Mus., 1893, 692.

[B—, C—, R—, C—.]

HAB. Lower Rio Grande Valley.

709 *a*. **Harporhynchus cinereus mearnsi** ANTHONY.

Mearns's Thrasher.

Harporhynchus cinereus mearnsi ANTHONY, Auk, XII, Jan. 1895, 53.

[B—, C—, R—, C—.]

HAB. Northern Lower California.

713 *a.* **Heleodytes brunneicapillus bryanti** ANTHONY.

Bryant's Cactus Wren.

Heleodytes brunneicapillus bryanti ANTHONY, Auk, July, 1894, 212.

[B 262, *in part*, C 43, *in part*, R 56, *in part*, C 63, *in part.*]

HAB. Northern Lower California, north into southern California.

719.1. **Thryothorus leucophrys** ANTHONY.

San Clemente Wren.

Thryothorus leucophrys ANTHONY, Auk, XII, Jan. 1895, 52.

[B—, C—, R—, C—.]

HAB. San Clemente Island, California.

767. **Sialia mexicana occidentalis** (TOWNS.).

Western Bluebird.

Sialia occidentalis TOWNS. Journ. Acad. Nat. Sci. Phila. VII, 1837, 188.

Sialia mexicana occidentalis RIDGW. Auk, XI, April, 1894, 151, 154.

[B 159, *in part*, C 17, *in part*, R 23, *in part*, C 28, *in part.*]

HAB. Pacific Coast, from British Columbia to southern California, east to western Nevada, and casually, during migrations, to New Mexico.

767 *a.* **Sialia mexicana bairdi** RIDGW.

Chestnut-backed Bluebird.

Sialia mexicana bairdi RIDGW. Auk, XI, April, 1894, 151, 157.

[B 159, *in part*, C 17, *in part*, R 23, *in part*, C 28, *in part.*]

HAB. Rocky Mountain district, south to northern Mexico.

767 *b.* **Sialia mexicana anabelæ** ANTHONY.

San Pedro Bluebird.

Sialia mexicana anabelæ ANTHONY, Proc. Cal. Acad. Sci., 2d Ser. II, Oct. 1889, 79. (*Cf.* RIDGW. Auk, XI, 1894, 151, 159.)

[B—, C—, R—, C—.]

HAB. San Pedro Martir Mountains, Lower California.

II. CHANGES OF NOMENCLATURE.

GENUS **Engyptila** SUNDEVALL (p. 180). This becomes

GENUS **Leptotila** SWAINS.

Leptotila SWAINS. Class. Bds. II, 1837, 349. Type, "*P. rufaxilla*. Nat. Lib. V. pl. 24" [*i. e.*, *Peristera jamaicensis*, Nat. Lib. IX, 207, pl. 24 (named on plate "*Peristera rufaxilla*")].

Leptotila Swains. has thirty-five years' priority over *Engyptila* Sundevall. The former name has been generally discarded as being preoccupied by *Leptoptilos* Vieillot, 1831, on the presumption that Swainson intended to write *Leptoptila*; but there being no satisfactory evidence that this was the case, *Leptotila* is accepted as a tenable name.

No. 318. **Engyptila albifrons** (*Bonap.*). This becomes

Leptotila fulviventris brachytera (SALVAD.).

Leptoptila brachyptera SALVAD., Cat. Bds. Brit. Mus. XXI, 1893, 545.

Leptotila fulviventris brachyptera A. O. U. Comm. Nomen. MS.

Professor Salvadori (l. c., p. 545, footnote) has found that the type of *L. albifrons* Bonap. in the Paris Museum "is undoubtedly a specimen of *L. jamaicensis*." The earliest specific name for No. 318 of the Check-List appears therefore to be *brachyptera* Salvad. 1893 (*ex* GRAY, 1856, *nomen nudum*), while *brachyptera* appears referable as a subspecies to *L. fulviventris* LAWR. (Ann. New York Acad. Sci. II, 1882, 287).

No. 421. **Chordeiles texensis** LAWR. This becomes

Chordeiles acutipennis texensis (LAWR.).

Chordeiles acutipennis, var. *texensis* BAIRD, BREW. & RIDGW. Hist. N. Am. Bds. II, 1874, 406. (*Cf.* HARTERT, Cat. Bds. Brit. Mus. XVI, 1892, 616.)

GENUS **Picicorvus** BONAP. This becomes a subgenus of *Nucifraga*. *Cf.* RIDGW. Auk, XI, April, 1894, 179.

GENUS **Nucifraga** BRISSON.

Nucifraga BRISSON, Orn. II, 1760, 58. Type, *N. caryocatactes*.

Hence No. 491, **Picicorvus columbianus** (WILS.) becomes

Nucifraga columbiana (WILS.).

Nucifraga columbiana AUD. Orn. Biog. IV, 1834, 459.

726 *a*. **Certhia familiaris mexicana** (GLOGER). This becomes

Certhia familiaris alticola MILLER.

Certhia familiaris alticola MILLER, Auk, XII, April, 1895.

III. ELIMINATIONS.

289 *c*. **Colinus virginianus cubanensis** (GOULD). Found to be extralimital. *Cf.* RIDGWAY, Auk, XI, Oct. 1894, 324.

767. **Sialia mexicana** SWAINS. Found to be extralimital. *Cf.* RIDGWAY, Auk, XI, April, 1894, 151–154.

IV. FORMS CONSIDERED AS NOT ENTITLED TO RECOGNITION.

Oceanodroma townsendi RIDGW. Proc. U. S. Nat. Mus. 1893, 687. Since the description of this species the type has been compared by Mr. Osbert Salvin with the type of *Thalassidroma melania* Bonap., in the Paris Museum, and found not to be different.

Vireo huttoni insularis RHOADS, Auk, X, July, 1893, 239. Considered as not separable from *V. h. obscurus* ANTHONY.

V. PROPOSED CHANGES OF NOMENCLATURE REJECTED.

[253.] *Totanus nebularius* (GUNN.) *vs. T. littorea* LINN. *Cf.* REICHENOW, J. f. O. 1889, 188. The Committee, on carefully reviewing the question, finds no reason for changing its former decision in the matter.

Bonasa umbellus fusca (ORD) COUES *vs. B. u. sabini* (DOUGL.). *Cf.* COUES, Lewis and Clark's Exped. ed. 1893, III, 872.

It is held that the proposed change is not in accordance with Canons XLIII and XLIV of the A. O. U. Code.

VI. ACTION DEFERRED.

Icterus gularis yucatanensis BERLEPSCH. *Cf.* Auk, XI, Jan. 1894, 51. Final action was again postponed.

RECENT LITERATURE.

Newton's 'Dictionary of Birds.' Part III.[1] — Part III[2] of this admirable work includes, besides the minor articles to be expected in such a connection, others of considerable length and unusual importance, as naturally follows from their authoritative authorship. Among such may be especially mentioned *Moa* (concluded from Part II) and *Odontornithes*, by Mr. Lydekker; *Monstrosities*, *Muscular System*, *Nervous System*, and *Pterylosis*, by Dr. Gadow; *Moor-hen*, *Moult*, *Nidification*, *Nightjar*, *Owl*, *Parrot*, *Partridge*, etc., by Professor Newton. Everywhere throughout the work Professor Newton has enriched his pages with much curious historic and philological information of great interest to every intelligent reader. His views regarding nomenclature, the status and relationship of groups, and kindred general questions, are conservative and based on full knowledge of what has been said by previous authorities. He is strenuously opposed to the admission of either genera or species based on slight differences, with a tendency perhaps to underrate the fine distinctions commonly made by the writers of the 'new school.' Dr. Gadow

[1] A | Dictionary of Birds | By | Alfred Newton | Assisted by | Hans Gadow | With Contributions from | Richard Lydekker, B. A., F. R. S., Charles S. Roy, M. A., F. R. S. | and | Robert W. Shufeldt, M. D. (late United States Army) | Part III (Moa-Sheathbill) | London | Adam and Charles Black | 1894. 8vo., pp. 577–832.

[2] For notices of Parts I and II, see *antea*, Vol. X, pp. 357–360, and Vol. XI, pp. 56–60.

and Mr. Lydekker display also a masterly command of their subjects. In short, the work thoroughly maintains the high standard of Parts I and II.

In concluding the present notice it may be not out of place to transcribe a few remarks on special points of interest to readers of 'The Auk.' Thus Dr. Gadow, in his article 'Muscular System' makes the following comment: "The taxonomic value of muscles is theoretically great, but very limited when put to practical test. Most of them cannot be understood unless the whole group to which they belong be examined, and the study of their correlations is a very complicated problem. To pick out a few of the most variable muscles of the leg, and to arrange birds in accordance with their mere presence or absence, without regard to intermediate stages, is an easy but scarcely serious mode of investigation, and there is no wonder that systems built on such simple notions broke down. There is no reason why a dozen different kinds of birds should not have lost the same muscle at different times and independently of each other, and that other kinds may not lose it in future if its function be no longer required or can be fulfilled by some other combination. . . It is certain that similar muscular combinations in two or more birds do not necessarily mean relationship, while on the contrary similar requirements are often met in similar ways. . . ."—J. A. A.

Stone's Birds of Eastern Pennsylvania and New Jersey.[1]—Mr. Stone, with the assistance of his fellow-members of the Delaware Valley Ornithological Club, has presented us with a faunal list which, except in unimportant details, may well stand as a model for works of this nature.

Chapter I, on 'The Geographical Distribution of Birds,' opens with remarks on the 'General Laws of Geographical Distribution,' and is followed by a detailed consideration of the 'Faunal Areas of Eastern Pennsylvania and New Jersey — their Physical Features and Characteristic Birds,' the value of which is much enhanced by a colored map.

Chapter II, on 'Bird Migration,' treats of the subject from both a general and local standpoint and should be read by every one interested in the study of this branch of ornithology. This chapter concludes with a nominal list of the 'Birds found within Ten Miles of Philadelphia,' some 260 in number, grouped under the following, in the main, well-chosen headings: I. Resident Birds. II. Species which are of rare or irregular occurrence in winter, but common summer residents.

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[1] The | Birds of Eastern Pennsylvania | and | New Jersey | With Introductory Chapters on | Geographical Distribution and Migration | Prepared under the direction of the | Delaware Valley Ornithological Club | By | Witmer Stone | Conservator Ornithological Section Academy of Natural Sciences of Philadelphia | — | Philadelphia | Delaware Valley Ornithological Club | 1894.—8vo., pp. vii + 185, frontispiece and two maps.

III. Common Summer Residents. IV. Summer Residents which are rare or local (many are common as transients). V. Winter Visitants of regular occurrence. VI. Winter Visitants of irregular occurrence or rare. VII. Species which occur occasionally in winter, but are mainly transients. VIII. Common Transients. IX. Rare or irregular Transients. X. Rare Stragglers.

Part II, an 'Annotated List of the Birds of Eastern Pennsylvania and New Jersey,' occupies pp. 35–152 and includes 352 species, or, subtracting 3 species[1] now extinct in the region under consideration and 3 hybrids,[2] we have a total of 346 species known from the district. To this may be added *Anas crecca*, recorded by Dr. C. C. Abbott (Geology of New Jersey), which, it is true, may have been omitted intentionally, though other records from the same doubtful source are given a place.

The annotations under each species consist of a brief and somewhat too general statement of its 'Breeding Range' and 'Winter Distribution,' given in separate paragraphs — an admirable plan — and remarks on the bird's manner of occurrence, which show that Mr. Stone has his subject well in hand and knows what to say and what to leave unsaid.

The total of 346 species tells us that few additional birds are to be expected from this district and the most promising fields for future workers lie in more clearly determining the faunal affinities of the mountainous parts of Eastern Pennsylvania, and especially the standing of the sea-birds of the Jersey coast, about which comparatively little is known. Records of *Procellaria pelagica* and *Phalacrocorax carbo* require confirmation, and it is probable additional observation will show that some birds, *e. g.*, *Micropalama himantopus* and *Ereunetes occidentalis*, are not so rare as Mr. Stone believes.

The bibliography, which concludes this excellent list, is proof that Mr. Stone is thoroughly familiar with the literature relating to the birds of Pennsylvania and New Jersey. Indeed, few records of importance seem to have escaped him. He does not, however, mention Mr. Lawrence's record of the European Woodcock from Shrewsbury, N. J. (Catalogue of Birds, 1866, p. 279); and in Mr. Thurber's 'List of Birds of Morris County, New Jersey' (True Democratic Banner, 1887) he will find additional records of such rare birds as *Elanoides forficatus*, *Accipiter atricapillus*, *Scotiaptex cinerea*, *Ampelis garrulus*, etc., and other notes of interest.

The work is well and tastefully printed, typographical errors are rare, and we congratulate Mr. Stone and his associates on having performed their task in a manner which demands the highest commendation. — F. M. C.

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[1] *Camptolaimus labradorius*, *Tympanuchus cupido*, and *Conurus carolinensis*.

[2] *Colaptes auratus* + *C. cafer*, *Helminthophila leucobronchialis*, and *H. lawrencei*.

A Flying Trip to the Tropics.[1]—In this pleasantly written journal the author gives us an account of a trip which occupied fifty-four days. Leaving New York June 11, 1892, with his wife and brother, he visited the Island of Curaçao, journeyed by boat up the Magdalena in Colombia as far as Yeguas, travelled by train to Honda, and thence proceeded over the mountainous Bogota road as far as Guadas, returning over the same route.

We cannot expect that so hurried a reconnaissance should yield much that was new from a naturalist's point of view, but the author proves conclusively that in comparatively few weeks we can visit lands which seem permanently beyond our horizon and make the acquaintance in life of at least the more characteristic forms of tropical bird-life. Indeed, to the naturalist the peculiar value of the book lies in the fact that the writer had no time to make a special study of anything. He found an abundance of material on every side, and his daily record of common-place sights and incidents evidently forms a well-balanced picture of town, roadside, and riverside bird-life.

From Curaçao he records 23 of the 39 species of birds known from the island, while his list of Colombian birds includes 91 species or perhaps one-sixth of those which inhabit the region passed through. In view of the limited time available for field-work he may feel proud of the 210 bird-skins which figure among the material results of his trip.

Few books of travel are more adequately or handsomely illustrated. The numerous maps, half-tone cuts, and drawings of animals admirably supplement the text. Naturalists will welcome the colored plates by Keulemans, and black and whites by Keulemans and the late Gustav Mützel; while the extended bibliographical appendix will be of value to future workers in the same field.—F. M. C.

Shufeldt on the Osteology of Cranes and Rails.[2]—After reviewing the recent classifications of the Paludicolæ, Dr. Shufeldt presents a synoptic table of the osteological characters of *Porzana carolina*, which are said to agree in the main with those of the genera *Crex* and *Rallus*, and also with those of the Coots (*Fulica*) and the Gallinules. In another table is given a comparative synopsis of the osteological characters of *Rallus longirostris*, *Aramus giganteus*, and *Grus americana*, from which

[1] A Flying Trip to the Tropics. A Record of an Ornithological Visit to the United States of Colombia, South America, and to the Island of Curaçao, West Indies, in the year 1892. By Wirt Robinson, Second Lieutenant, Fourth U. S. Artillery. Cambridge: Printed at the Riverside Press, 1895. Sq. 8vo., pp. i–x, 1–194, 108 illustrations.

[2] On the Osteology of Certain Cranes, Rails, and their Allies, with Remarks upon their Affinities. By R. W. Shufeldt, M. D. Journ. Anat. and Phys., Vol. XXIX, 1894, pp. 21–34.

he concludes that "the Courlans possess a greater number of gruine characters than they do ralline ones." The Paludicolæ are divided into two superfamilies, the Gruioidea, and the Rallioidea, the first including the Cranes and Courlans, each as distinct families, and the other the Rails, Gallinules and Coots.—J. A. A.

Grundtvig on the Birds of Shiocton, Wisconsin.—Mr. Grundtvig's paper was originally published in Danish in 1888, and has recently been translated into English and republished.[1] It is a copiously annotated list of 183 species, the result of systematic daily observations carried on by the author "from October, 1881, to October, 1883," within the limits of a very small area Outagamie County, Wisconsin. The introductory pages (pp. 73–94) describe the author's method of work, the general character and extent of the region treated and the distribution of the birds therein, and also notes the influence of the spring weather upon the arrival of the migratory birds in both 1882 and 1883. During the period mentioned the author appears to have given a large part of his time to the study in the field of the birds of his immediate vicinity, and the results of such detailed work, here presented, possess unusual value and interest. Thanks are due Mr. Faxon and to the Wisconsin Academy for rendering Mr. Grundtvig's paper accessible to English readers.—J. A. A.

Bourns and Worcester on the Birds of the Philippine Islands.[2]—The authors of the present paper "had the honor of forming two of the 'party of five collectors from the United States' which constituted the Steere Expedition to the Philippines" in 1887–88, when thirteen of the larger islands of the group were visited in company with Dr. Steere. "Being convinced," say these authors, "that much remained to be done, both in the discovery of new species and in the working out of the exact distribution of species already known, we were extremely anxious to return and continue the work. This we were enabled to do in the summer of 1890 through the liberality of Mr. Louis F. Menage, a public spirited citizen of Minneapolis, Minnesota, and a member of the Minne-

[1] On the Birds of Shiocton in Bovina, Outagamie County, Wisconsin, 1881–83. By F. L. Grundtvig. Trans. Wisconsin Acad. Sciences, Arts, and Letters, Vol. X, 1894, pp. 73–158, with map. Translated by Charles E. Faxon, from the Videnskabelige Meddelelser fra den naturhistoriske Forening i Kjöbenhavn for Aaret 1887, pp. 305–396 (1888). Translation "Issued July, 1894."

[2] Preliminary Notes on the Birds and Mammals collected by the Menage Scientific Expedition to the Philippine Islands. By Frank S. Bourns and Dean C. Worcester. Minnesota Acad. Nat. Sciences, Occasional Papers, Vol. I, No. 1, Dec., 1894. 4to., pp. 64.

sota Academy of Natural Sciences. The entire expense of the expedition was borne by Mr. Menage, and its results were donated to the Academy of Sciences." In the present brochure we have the first fruits of this praiseworthy enterprise, sustained by Mr. Menage. "During the stay of two years and five months in the Philippines" seventeen of the islands were visited. Reference is made to the "careful series of measurements of more than four thousand" specimens of birds, which will appear in their final report, taken for the purpose of showing "the relative amount of individual variation in the representatives of those genera which display a strong tendency to develop local species as compared with other genera which show no such tendency."

In the present preliminary paper 36 species of birds are described as new, and new localities are given for 226 species previously recorded from these islands. Important notes are given on some 40 species previously described from the Philippines, supplementing the previous more or less incomplete descriptions, or treating of questions of nomenclature, including remarks on the *Dicæum trigonostigma* group as represented in these islands. The final report on the results of this important expedition will be awaited with interest. — J. A. A.

Merriam's Laws of Temperature Control of the Distribution of Land Animals and Plants.[1] — In his recent Vice-Presidential address before the National Geographic Society of Washington, Dr. Merriam has given the results of his long-continued investigations of the influence of temperature in controlling the distribution of animals and plants over the earth's surface. Investigations made by botanists tend to show that plants require a certain amount of heat — the amount varying of course with the species — to reach a given stage of development, as leafing, flowering, the maturation of seed, etc. This quantity is computed on the basis of the average temperature of each day which reaches the minimum required for the functional activity of the particular species in question. As Dr. Merriam states it, "the substance of this theory is that the same stage of vegetation is attained in any year when the sum of the mean daily temperatures reaches the same value, which value or total is essentially the same for the plant in all localities." Reasoning from this, Dr. Merriam observes: "If it is true that the same stage of vegetation is attained in different years when the sum of the mean daily temperatures reaches the same value, it is obvious that the *physiological constant of a species must be the total quantity of heat or sum of positive temperature required by that species to complete its cycle of development and reproduction.*" He has

[1] Laws of Temperature Control of the Geographical Distribution of Terrestrial Animals and Plants. Annual Address by Vice-President Dr. C. Hart Merriam. Nat. Geog. Mag., Vol. VI, 1894, pp. 229–238, pll. xii–xiv.

accordingly attacked not only the subject of the "species constant" but that of the "zone constant." "In conformity with the usage of botanists," he continues, "a minimum temperature of 6° C. (43° F.) has been assumed as marking the inception of the period of physiological activity in plants and of reproductive activity in animals. The effective temperatures or degrees of normal mean daily heat in excess of this minimum have been added together for each station, beginning when the normal mean daily temperature rises higher than 6° C. in spring and continuing until it falls to the same point at the end of the season. The sums thus obtained have been platted on a large scale map of the United States, and isotherms have been run which are found to conform in a most gratifying manner to the northern boundaries of the several life zones." The available data, though not so full as desirable, appear "to justify the belief that animals and plants are restricted in northward distribution by the total quantity of heat during the season of growth and reproduction."

The southern limit of distribution of species, however, must evidently be determined by some other cause, as, probably, a degree of heat greater than they are able to sustain. "The difficulty," as Dr. Merriam observes, "is in ascertaining the *length of the period* whose mean temperature acts as a barrier." This for the present he has "arbitrarily" assumed to be the "six hottest consecutive weeks of summer"; and on platting the mean normal of this period it is found to agree so closely "with the southern boundary of the Boreal region" "as to justify the belief that animals and plants are restricted in southward distribution by the mean temperature of a brief period covering the hottest part of the year."

Three maps accompany the paper, giving (1) the 'Distribution of the total quantity of Heat during Season of Growth and Reproductive Activity'; (2) 'Mean Temperature of Hottest Six consecutive weeks of the Year'; (3) 'Life Zones of the United States.' The boundaries limiting the temperature areas and the life zones are so nearly coincident that they are practically identical! The temperature observation stations are shown on the first two maps, and from their remote positions along some of the boundaries platted it is evident that these lines are to some extent tentative and hypothetical; yet it is not probable that they will be found far from their correct position when fuller data are secured.

Dr. Merriam's paper is not only a step in the right direction but a most important contribution to the subject in hand. The premises are in the main sound, but it is evident that no one temperature limit will fit all species as a point of departure for computing the species constant, reproductive activity, in many animals at least, beginning at a temperature far below 6° C., the "inception of reproductive activity" being often determined by a combination of circumstances having little to do with a definite temperature of 6° C., however different the case may be with plants.—J. A. A.

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GENERAL NOTES.

Brünnich's Murre in Oneida County, N. Y. — The first week of December last, a specimen of Brünnich's Murre (*Uria lomvia*) was caught alive, a few miles south of this place, by a school girl, on the road between Lime Kiln Creek and Black River Canal. The bird was kept in confinement for a couple of days, when it died. It was offered meat, but refused to eat. As near as I can ascertain the bird was captured December 5, 1894.

Late in December I obtained possession of another specimen of this same species. This one was captured alive by a farmer, about December 15, a few miles south of where the other was caught. It lived but two days in confinement. The stomachs of both birds were empty. Mr. Egbert Bagg informs me that a specimen of this same Murre was caught alive at Utica, December 24. This is the first record of *Uria lomvia* from Oneida County. — WILLIAM S. JOHNSON, *Boonville, N. Y.*

Brünnich's Murre (*Uria lomvia*) **in Connecticut.**— I have a specimen of this species which was shot at Rocky Hill, Conn., Nov. 18, 1893. The man who shot it said it was very tame and that it permitted a very near approach. On dissection it was found to be in very lean condition. This is the first occurrence of this bird in this locality so far as I can learn.—WILLARD E. TREAT, *East Hartford, Conn.*

The Pacific Kittiwake at San Diego, California. — About the first of February I noticed a small immature Gull among a flock of *Larus delawarensis* near one of the San Diego wharves, that was evidently different from its associates. One other Gull in the flock seemed to be similar, but as it was an adult its distinctive marks were less noticeable, and owing to the proximity to the wharves and shipping I was unable to shoot either. A week later I saw what I have reason to think was the same Gull, at the same wharf, and identified it as an immature *Rissa tridactyla pollicaris*. The same bird was several times seen feeding about the garbage scow in company with Glaucous-winged, Western, American Herring, Ring-billed, and Heermann's Gulls, and was at all times noticeably fearless, so much so that on two occasions I nearly secured it with a stone. No opportunity for shooting it was offered until Feb. 26, when it was seen alone at some distance from its usual haunt. A few pieces of meat thrown from the door of a boat-house soon brought a swarm of common Gulls, and with them the stranger, which was easily secured. This extends the known range of the species considerably south of all published records.

In this same connection I would mention the probable occurrence in San Diego Bay of *Larus vegæ* the past winter, a Gull being several times seen about the wharves that I think was that species, but as it could not be secured the record is open to question. — A. W. ANTHONY, *San Diego, Calif.*

Terns of Muskeget Island. — A Correction. — In my article on the Terns of Muskeget, published in 'The Auk' for January (p. 35, 17 lines from top) for "On May 19, 1893," read, On June 19, 1893. The first eggs observed in 1893 were 35, on May 26; on the 28th, 130 were noted. — GEORGE H. MACKAY, *Nantucket, Mass.*

Breeding Habits of Terns. — I am glad to be able to corroborate two statements in the January number of 'The Auk' in the article entitled 'Terns of Muskeget Island.' It is generally accepted, I believe, that two Terns sometimes lay their complement of eggs in the same nest, although, so far as I know, it has never been proved. I have several sets of eggs of *Sterna hirundo* and *S. paradisæa* that may add a little to the evidence in favor of this belief. They were collected by myself June 28, 1891, on Egg Rock, Popham, Maine, where these two species were nesting alone. First, four eggs taken from same nest. Two eggs are long, narrow and were nearly fresh. The other two are much like Sandpiper's eggs in shape and the incubation was far advanced. Second, five eggs taken from one nest. Three are long, narrow, similar in coloration and were *much* incubated. The other two are similar to each other in every respect, but they are larger than the others, noticeably different in coloration, similar to a Sandpiper's egg in shape, and were fresh. I think that part of these eggs were laid by *S. hirundo* and the rest by *S. paradisæa*. Third, six eggs taken at one time from the same nest. These were all fresh and differ mainly in coloration. There are three eggs of each bird apparently. Those of one bird are as similar to one another as a Tern's eggs ever are, but clearly different from those of the other bird. I believe that Terns very rarely lay more than three eggs.

On page 46 of the same article is given a description of a Tern's nest consisting of a hollow lined with small stones. I have seen several, perhaps five or six, nests of this kind. In every case the stones formed the only lining to the nest and were evidently collected by the birds as any other material might have been for the same purpose. — AUBREY B. CALL, *Townshend, Vt.*

Diomedea exulans on the Columbia in 1813. — In preparing for publication the MS. Journals of Alexander Henry, Junior — a fur trader, who lived for some years at Astoria, and who was drowned there — I find the following entry, under date of Feb. 13, 1813:

"We were visited by some natives who came to trade with us. Among other things they produced an Albatros they had just killed. The body and head were white, the tail and wings gray, the bill pale pink, and the legs pale blue. The bill was 7 inches long, formed somewhat like an Eagle's; the wings were very narrow, but measured from tip to tip seven feet ten inches." This description is somewhat equivocal, as the alar extent is rather that of *D. albatrus* than that of *D. exulans;* but Mr.

Henry may not have stretched the wings to their fullest extent; also, this discrepancy is more than offset by a bill 7 inches long, and especially by the blue color of the feet. I think this may be safely accepted as an authentic record of the occurrence of *D. exulans* at the mouth of the Columbia River. I may add that Mr. Henry is a very well-known person in the annals of the famous old North West Company, to whose credibility no shadow of suspicion has ever attached. — ELLIOTT COUES, *Washington, D. C.*

The Black-capped Petrel (*Æstrelata hasitata*) in Ulster County, New York, in January. — A partly mounted specimen of this species was shown to me on February 4 of this year by Mr. Arthur Barker, taxidermist, of 16 North William Street, New York City. He remarked that he had killed it two days before in order to mount it. Later on I received from Prof. Henry L. Griffis of the State Normal School at New Paltz, Ulster County, New York, an interesting account of its capture there by Mr. August Vradenburgh, on January 26, 1895. It was found by the roadside in the snow and was easily taken by hand, appearing to be in an exhausted condition; yet it lived seven days in captivity before being killed, having been sent, alive, to Prof. John I. Hover, of Brooklyn, N. Y., in whose collection the mounted bird now is. — L. S. FOSTER, *New York City.*

The European Widgeon (*Anas penelope*) in Indiana. — Although this Duck is not an infrequent straggler to North America, it has usually been recorded from localities on the Atlantic and Pacific coasts, and rarely in the interior, two instances being on record for Illinois and one for Wisconsin. The specimen in question was taken on the Kankakee River, at English Lake, Ind., on April 13, 1893, by Mr. Landon Hoyt of Chicago, Ill., and is now in his possession. When shot it was in company with a flock of Baldpates (*Anas americana*). — RUTHVEN DEANE, *Chicago, Ill.*

Baird's Sandpiper on Long Island Sound, N. Y. — Dr. E. H. Eames and I shot two Baird's Sandpipers (*Tringa bairdii*) Sept. 29, 1894, at Seaside Park, on Long Island Sound. There were ten or more in the flock, also a few Semipalmated Sandpipers. They were very unsuspecting and the whole flock might have been taken. Mr. J. B. Canfield, also of this city, secured a fine male a few days later. — H. H. TAYLOR, *Bridgeport, Conn.*

The Golden Eagle in New Jersey. — The publication of Mr. Stone's excellent list of 'The Birds of Eastern Pennsylvania and New Jersey' reminds me of an unrecorded adult *Aquila chrysaëtos* taken at Vineland, New Jersey, February 19, 1868, and now in my collection. It was sent to me in the flesh by a relative living in Vineland. My notebook says the bird was killed with a club, having gorged itself with portions of a deer recently shot. — JNO. H. SAGE, *Portland, Conn.*

The White Gyrfalcon in New England. — Not long since Mr. George A. Boardman wrote me that he had heard of the capture, in eastern Maine, of a very light-colored Gyrfalcon. Upon my expressing a lively interest in the matter he very kindly put me in correspondence with Mr. John Clayton of Lincoln, Maine, who mounted the specimen and from whom I have just purchased it. Although too dark colored to be typical of that form it is, nevertheless, an unmistakable example of *Falco islandus* Brünn. It is a young bird and, judging by the measurements, a male, although the sex was not determined by dissection. It was shot in South Winn (just south of Lincoln) about October 8 (Mr. Clayton received it on the 9th and in such fresh condition that he does not think it could have been dead more than twenty-four hours), 1893, by a young man named Wyman who found it perched on a telegraph pole.

This capture is of considerable importance, for the White Gyrfalcon does not appear to have been before taken in New England if, indeed, it has occurred anywhere within the United States. It has been reported more than once, but in every case, apparently, either on insufficient evidence or mistaken identification. The repeated changes or interchanges of names in the Gyrfalcon group have also led to much confusion. A recent instance of this is the mention by Mr. Chapman (Birds of Vicinity of New York City, 1894, p. 41) under "*F. islandus* Brünn." of the Long Island (New York) specimen originally recorded by Mr. Lawrence (Ann. Lyc. Nat. Hist. New York, VIII, 1866, p. 280) and since referred to by Mr. Ridgway (Hist. N. Am. Birds, III, 1874, p. 114) and by Mr. Dutcher (Auk, X, 1893, p. 274) as *F. islandicus*.[1] Mr. Chapman now writes me that he has never seen this specimen and "had not the slightest intention of changing its original identification," but that he was misled "into giving *F. islandus* as the equivalent of *F. islandicus*." It may be well, therefore, to improve this and every convenient opportunity to reiterate the fact that, under the arrangement first proposed by Dr. Stejneger (Auk, II, 1885, pp. 187, 188) and afterwards adopted in the A. O. U. Check-List, the bird which, prior to 1885, was so generally called *F. candicans* now stands as *F. islandus*, while that formerly known (among American writers at least) as *F. islandicus* has become *F. rusticolus*.— WILLIAM BREWSTER, *Cambridge, Mass.*

The American Barn Owl Breeding at Washington, D. C., in Winter. — One or more pairs of American Barn Owls (*Strix pratincola*) have been known to breed for a number of years in one of the towers of the Smithsonian Institution, and eggs of this species taken here in June, 1861, and June 1, 1865, are now in the United States National Museum collection.

[1] Since writing the above I have examined this Long Island bird, which is now in the collection of the Brooklyn Historical Society. It proves to be a perfectly typical example of *Falco rusticolus gryfalco* in nearly mature plumage.

On Dec. 8, 1893, a young bird which had but recently left its nest (a good deal of down still showing through its plumage) was caught by one of the watchmen and turned over to the Ornithological collection, where I saw it while still in the flesh. This specimen was probably hatched some time in October, and I considered this a rather remarkable, late breeding record at the time. On Feb. 27, 1895, another specimen of about the same age was picked up in a bush in the Smithsonian grounds, in which it became entangled, and this was certainly not over two months old and must have been hatched in the latter part of December, 1894, if not early in January, 1895, certainly a most unusual time of the year for this Owl to breed in this latitude. — CHAS. E. BENDIRE, *Washington, D. C.*

The Great Gray and Hawk Owls in St. Lawrence County, N. Y. — While at Ogdensburg, St. Lawrence Co., N. Y., recently, I examined a local collection of mounted birds and study skins owned by Mr. H. M. Davidson. In it I found three Great Gray Owls (*Scotiaptex cinerea*), all of which had been shot in the county within a period of five years. I also found four American Hawk Owls (*Surnia ulula caparoch*) which had been secured within the past few years in a large swamp in the township of Hammond, which is in the same county.

On the 19th of December, 1894, while at Carthage, which is at the western border of Jefferson County, New York State, I saw a Grackle — species not determined, as the bird flew on my approach. The day was bright and clear, with the temperature but little above 20°. A farmer near me remarked that he "guessed that bird had made a mistake and thought spring had come." — WILLIAM DUTCHER, *New York City.*

An Albino Ruby-crowned Kinglet. — On February 4 I shot, near this place, a nearly perfect albino Ruby-crowned Kinglet (*Regulus calendula*). The bird was a female and the only one I have seen here for some time. The body is pure creamy white, with a wash of lemon yellow on the rump; head grayish brown, with numerous flecks of white. The edges of the tail and wing feathers are edged with yellowish white, giving a frosty appearance to the closed wing and tail and hiding largely the otherwise dusky feathers. — A. W. ANTHONY, *San Diego, Cal.*

Clark's Nutcracker. — In my note on Clark's Nutcracker in 'The Auk' for January, 1895 (p. 82), the heading reads 'Clark's Nutcracker in Eastern Missouri.' This is a geographical error and should read *Western* Missouri, as Kansas City is divided by the Missouri-Kansas State line and is situated in the western border of Jackson County.

Mr. Goss, in his 'Birds of Kansas,' speaks of this species as being an accidental visitant to Kansas and mentions only one specimen as secured in that State, and of which a part of the skin was sent to him for identification. This bird was killed August 13, near the south line of Marshall

County, which is located in the northern part of Kansas, about one hundred miles west, and thirty miles north of this city; while the specimen mentioned by Mr. Mitchell in the October Auk, 1894 (XI, p. 327), killed at Earl, Crittenden County, Arkansas, April 1, 1891, and sent to Memphis, Tenn., for identification, was taken about two hundred and fifty miles east, and three hundred miles south of this point. The one noticeable fact in regard to the capture of these three specimens is the different seasons in which the birds were taken, the Crittenden County, Arkansas, bird having been captured in spring (April 1, 1891), the Marshall County, Kansas, bird in summer (Aug. 13, 1888), and the Jackson County, Missouri, bird in autumn (Oct. 28, 1894). Mr. Kellogg notes in 'The Auk' for July, 1894 (XI, p. 260), that Mr. Menke of Finney County, Kansas, records, "Three birds were seen Oct. 10, 1891," in the far southwestern portion of that State, but no specimens were secured. — JOHN A. BRYANT, *Kansas City, Mo.*

The Cowbird Wintering in New Hampshire. — I shot a male Cowbird (*Molothrus ater*) Jan. 18, 1895, on one of the principal streets of the town. It was in company with a flock of Sparrows feeding in front of a grain store. The bird had been seen at odd times throughout the winter, usually in company with the Sparrows. It was in good plumage and condition, and did not seem to mind the cold weather. It would probably have remained all winter, for the snow had covered the ground for nearly two months and the mercury had touched 20° below zero several times. — F. B. SPAULDING, *Lancaster, N. H.*

The Goldfinch (*Carduelis carduelis*) near Boston, Mass. — In Brookline, Massachusetts, in May, 1892, I noted a bird of this species feeding in a pine tree in company with a few American Goldfinches. It seemed perfectly at home and therefore I take it was not an escaped cage bird, — rather one of the Goldfinches or their offspring that were imported to this country not long ago. — REGINALD HEBER HOWE, JR., *Boston, Mass.*

Second Occurrence of Harris's Sparrow (*Zonotrichia querula*) in British Columbia. — Mr. Allan C. Brooks writes me that on January 9, 1895, he shot two Harris's Sparrows and saw a third at Chilliwack, British Columbia. According to Mr. Rhoads the only previous instance of the occurrence of this species "on the Pacific side of the Rocky Mountains" is that of a specimen taken by Mr. Maynard near Victoria early in April, 1891 (Rhoads, Proc. Acad. Nat. Sci. Phila., 1893, p. 49). — WILLIAM BREWSTER, *Cambridge, Mass.*

A Set of Unspotted Eggs of the Chipping Sparrow. — Nests of the Chipping Sparrow (*Spizella socialis*) are frequently found containing one or two of the eggs without spots, but never until the past summer have I found or heard of a set in which *all* the eggs were devoid of

markings. The set in question was found at Milford Mills, Chester County, Pa., on May 17, 1894, at which time the nest contained two eggs. Being obliged to leave the locality on the following day, I had Mr. Frank Powell forward me the nest and eggs as soon as the set was complete. On close inspection there is seen a faint suggestion of a few small spots on the larger end of one of the eggs, but this is not noticeable on casual examination. The eggs are somewhat shorter than the ordinary type, but the transverse diameter is greater, thus giving them more of a rounded appearance. Their color, aside from the absence of spots, is normal. There was nothing unusual about the nest, it being composed of dried grass and lined with horse hair. It was built in the forks of a limb of an apple tree in an orchard. — WILLARD L. MARIS, *Newtown, Pa.*

Junco hyemalis shufeldti in Lower California. — In looking over a small series of Juncos taken the past spring between Tia Juana and San Fernando, Lower California, I was somewhat surprised to find one specimen that was easily referable to *shufeldti*. Upon turning to my note-book I find that the bird in question was taken on March 29, in the Carriso Valley, about six miles east of Tia Juana and two or three miles south of the United States boundary line. It was a fine male and the only Junco noted in several days' collecting at that point. With the exception of *J. h. townsendi* which, so far as my observations go, is confined to the immediate region of San Pedro Martir, all of the other Juncos that I have examined from the northern part of the peninsula have proven to be typical *J. h. thurberi*. In January, 1894, I secured a single specimen of this race in a willow thicket at El Rosario, the most southern point that I have met with the genus. I found *thurberi* common in the Burro Cañon, a short distance north of Ensenada, in late April, and they may have been nesting though I have no positive evidence of their so doing, so near the sea level.

If is more than probable that Mr. Bryant's Guadaloupe Island record of *J. oregonus* (Catalogue Birds of Lower California), refers to *thurberi*, that race not having been described at the time the list was published. — A. W. ANTHONY, *San Diego, Cala.*

Mortality among White-bellied Swallows in Florida. — During the almost unprecedented cold snap which prevailed throughout Florida in the first half of February, an exceedingly large number of White-bellied Swallows succumbed to the severity of the weather. These were either directly killed by the sudden fall in temperature or were overcome by the scarcity of insect food occasioned by the protracted cold. While I have no information as to the condition of affairs in other parts of the State, it seems reasonable to suppose that what was observed in this section obtained elsewhere.

On February 13, while driving along the stage route between Lake Worth and Biscayne Bay, numerous dead birds were noticed. At New

River, on the afternoon of the same day, when the cold was not especially severe, although it had been so the previous night, many Swallows while on the wing were seen to fall lifeless into the river. I learn that at Lemon City for several days the boys amused themselves by dropping their hats over benumbed or exhausted Swallows on the docks. On the morning of February 15, seven dead birds were taken from under the seat of a catboat where they had evidently sought shelter during the previous afternoon and had perished in the night. The same day I noticed many dead Swallows in the water and on the shores of Biscayne Bay adjacent to this place. At Cocoanut Grove, about ten miles further south, many birds were killed, over sixty dead Swallows being found one morning on the roof of a piazza. Persons who visited the ocean shore, which is a favorite resort for these birds, reported the beach as thickly bestrewn with dead Swallows. At the house of refuge, located on the coast opposite this place, over one hundred and fifty dead birds were counted one day.

An examination of the alimentary tracts of some of the birds showed an entire absence of food; and to this cause, rather than the direct influence of the cold, I am inclined to attribute the exceedingly great mortality which ensued. — HUGH M. SMITH, *Lemon City, Dade Co., Florida.*

The Rough-winged Swallow (*Stelgidopteryx serripennis*) **and Tree Swallows** (*Tachycineta bicolor*) **Wintering in South Carolina.** — I shot a male Rough-winged Swallow on the morning of December 22, 1894, which had been in the neighborhood for over a month, and which had roosted in a barn since November. I also shot two Tree Swallows on January 4, 1895. The weather was intensely cold between these dates, the thermometer registering as low as 8° above zero. It is not unusual to see hundreds of Tree Swallows on mild days in January and February, but it is certainly surprising to find them braving a temperature of 8° to 10° above zero. The Tree Swallows had their throats stuffed with myrtle berries, which they subsist upon in the fall and winter months. — ARTHUR T. WAYNE, *Mount Pleasant, S. C.*

A Ground Nest of the Black-throated Green Warbler. — This Warbler is notoriously variable in its choice of a nesting site. The usual situation, of course, is the horizontal branch of a pine, hemlock or spruce, but I have seen nests built at or near the tops of tall specimens of these evergreens, in deciduous trees, such as birches and elms, and in barberry bushes in open pastures. It appears, however, that there is an even wider range of possibilities, for Mr. Clarence H. Watrous has just sent me a nest which he found — at Chester, Connecticut, June 18, 1894 — *on the ground* "among a large clump of ferns in a very low and damp place under a heavy growth of hemlocks." There is nothing peculiar about the composition or construction of this nest save that it

is unusually bulky and loosely woven at the bottom, showing plainly — were such evidence needed — that it must have originally rested on a broader and more stable foundation than the fork or branch of a tree or shrub. Its identification is placed beyond all question by the fact that it is accompanied by the skin of its little architect and owner who was shot while sitting on her four eggs. These, it may be added, are perfectly typical eggs of *D. virens*. — WILLIAM BREWSTER, *Cambridge, Mass.*

Dendroica palmarum in New Jersey. — Learning from Mr. Witmer Stone's 'Birds of Eastern Pennsylvania and New Jersey' that this western race of the Palm Warbler has not been recorded from the region covered by that work I desire to record my capture of an adult female *Dendroica palmarum* at Red Bank, Monmouth County, New Jersey, September 28, 1889. Several others were observed at close range and the comparative absence of yellow remarked. — HARRY C. OBERHOLSER, *Washington, D. C.*

Breeding of the Blue-gray Gnatcatcher in Minnesota. — Until the summer of 1892 this bird was a rare visitor in Minnesota and was not supposed to breed here at all. In the month of April, 1892, several pairs were observed near St. Paul for the first time. In June a nest was found by a local collector and brought to me for identification. The parent being taken with the nest it was easily identified. This find set me to searching for their nests the next season, and I was rewarded with a fine set of five eggs which were taken with the nest and parent in June. That was the only nest observed in 1893. The past summer the birds were much commoner than ever before, and four nests were found, three with eggs. The first nest was taken May 27, and contained four fresh eggs. The second set was taken on June 2, with five slightly incubated eggs. The third, also taken on June 2, contained four fresh eggs. The fourth nest, taken on June 18, contained four young, just hatched, and one addled egg. This is, I believe, the first record of the Gnatcatcher breeding north of 43° N. lat., St. Paul being in lat. 45° N. All the nests, with one exception, were taken in West St. Paul, in Dakota County. They were all placed on horizontal branches of the burr oak and the height varied from twelve to twenty-four feet. — WALTON MITCHELL, *St. Paul, Minn.*

The Systematic Name of the Mexican Creeper. — The specific or subspecific name *mexicana* has long been in use for the *Certhia* inhabiting the mountains of Guatemala, Mexico, and southern Arizona. The original reference to the name I have had no opportunity to verify, but it is credited to Gloger (Handbuch, 1834, 381) and Reichenbach (Handb. Spez. Orn., 266). The former is cited in the American Ornithologists' Union Check-List and by Mr. Sharpe in Volume VIII of the 'Catalogue

of Birds in the British Museum,' the latter by Messrs. Salvin and Godman in the 'Biologia Centrali-Americana.' In either case the name is antedated by *Certhia mexicana* Gmelin, Syst. Nat., I, 1788, 480. Gmelin's bird, "C. rubra, gutture viridi, remigum apice cærulescenti," is the *Certhia rubra mexicana* of Brisson (Aves, III, 651), a species not easily identifiable, but certainly not a *Certhia* (perhaps one of the red species of *Myzomela*). As no other name has been proposed for the Mexican Creeper, the bird (No. 726*a* of the A. O. U. Check-List) may stand as *Certhia familiaris alticola*. — GERRIT S. MILLER, JR., *Washington, D. C.*

A New Family of Birds.— In revising the North American Finches and Tanagers Mr. Ridgway has found it necessary to establish a new family for the reception of the members of the genus *Procnias*. This distinction is certainly warranted by the cranial characters of the genus, the skull, among other things, being notable from the shape of the palatines and total absence of transpalatine processes. The head and skull of *Procnias*, it may be remembered, suggest those of a Swallow, but the resemblance is purely superficial, the skull structurally resembling that of a Tanager more than it does that of a Swallow.— F. A. LUCAS, *Washington, D. C.*

The Tongues of Birds.— Herr Schenkling-Prévôt contributes an interesting article on the tongues of birds to the November number of the 'Zoologische Garten,' although some of his statements must not be too implicitly trusted. Such, for example, are the remarks that the tongue of the Woodpecker is not used as a spear, but as a "lime twig" to which insects are stuck by the viscous saliva, and that it is an organ of incomparable pliancy, feeling about in all directions.

Now, as a matter of fact, the structure of the Woodpecker's tongue is such as to render it, for its length and slenderness, extremely rigid, and while the Flicker undoubtedly draws ants out of ant-hills by means of the sticky mucous with which the tongue is plentifully besmeared, yet there can be no doubt that the barbed tip serves, like a delicate eel spear, to coax larvæ out of their hiding places in trees. Herr Prévôt is probably not acquainted with our Sapsucker or he would have called attention to the peculiar modification by which the tongue is rendered an admirable swab for collecting syrup.

The tongues of graminivorous birds are said to be often arrow-shaped, or awl-shaped, a term which certainly does not apply to any of our North American Finches, in which the tongue is rather thick and fleshy, and slightly bifid or brushy at the tip, being so constructed as to play an important part in husking seeds.

Herr Prévôt decidedly overestimates the probable taxonomic value of the tongue, for no other organ seems to be so subject to variation; no two species of North American Sparrows that have come under my observation have the tongues exactly alike, while two such near neigh-

bors as *Melospiza fasciata* and *M. georgiana* have tongues quite different from one another. No one would suppose from their tongues that *Picus* and *Sphyrapicus* were members of the same family, while such diverse forms as *Micropus*, *Hirundo* and *Procnias* would, from a 'glossological' point of view, stand shoulder to shoulder. On the other hand, so great may be the amount of individual variation, that three distinct species could be made from the four examples of the Cape May Warbler which have passed through my hands.

Resemblances between tongues indicate more or less similarity in food or mode of procuring it rather than any real affinity between their owners; but while the tongue is apparently of slight taxonomic value it is extremely interesting as showing the remarkable number of modifications which an organ may exhibit and its great susceptibility to physiological adaptation.— F. A. Lucas, *Washington, D. C.*

Bird Fatality along Nebraska Railroads. — There is a certain bird fatality along railroad lines which is commonly charged to the telegraph wires. Doubtless they are the chief executioners, but not the dark destroyer of all the dead birds along our railroads. In Nebraska more fatality, as I believe, is to be charged to the moving train than to the wires. It is one of the larger States (exceeding in size all New England by 11,000 square miles), and though treeless, save in the cañons and along river courses, it is quite diversified. Still there are large areas of prairie that seem entirely level and unbroken. Here there are no trees, bushes or stones to offer shelter to winter birds. The prairie grasses are very short and give but little protection, and large numbers of misguided birds seek shelter in the lee of the steel rails of railroad tracks.

These are almost wholly Horned Larks. As one walks along the track at night they fly up in considerable numbers from their dangerous shelter, especially in severe weather. The Larks are attracted thither as much by the food and the grain dribbled along the way by passing trains as by the protection which the treacherous rails offer. Crouching at night in the shelter of the rails, and stupefied by the noise and light of approaching trains they rise too late, are struck by the flying train, and thrown dead to either side of the track. I have seen them lying thus in scattered bunches of ten or a dozen. Railroad men say it is the work of the train, and such I believe it to be.

It is the habit of these Larks to fly low, just skimming the surface of the ground, and it is highly improbable that they came to an untimely end by striking the telegraph wires. — Edwin H. Barbour, *Lincoln, Nebr.*

Florida Notes. — Shortly after the late 'freeze' in Florida (on Feb. 9 the temperature was 28° F. at 7 A.M. at New River) large numbers of White-bellied Swallows were seen flying about and a few days later numbers of them were found dead. I saw at least a dozen floating in the

river. One bird fluttered down near us and died in a few minutes. I opened several and found them all very much emaciated, and the stomachs in nearly all cases were empty.

On Lake Worth I counted fourteen flocks of the Surf Scoter (*Oidemia perspicillata*) each containing from nine to twenty-three birds. Two Old Squaws were also seen at the Canaveral Club, near Titusville, during the December freeze. Thousands of small fish were killed in the Banana River, and several Lesser Scaup Ducks were found dead, evidently choked to death by fishes which they had attempted to swallow.

The weather remained rather cold for several days and Mallards and Northern Black Ducks were not uncommon, and Surf Scoters were abundant flying south along the coast in flocks. Robins have been unusually abundant in Florida all winter. Paroquets (*Conurus carolinensis*) are not uncommon in the cyprus swamps at the head of Cyprus Creek; several flocks were seen about my camp at south branch of Middle River, and I killed six out of one flock. The Indians tell me that Paroquets are not uncommon to the north and east of Lake Okeechobee. — CHARLES B. CORY, *In camp on South Branch of New River, Dade Co., Fla.*

Notes on the Winter Birds of Cape Cod, Massachusetts. — At a meeting of the Nuttall Club during the winter of 1892, Mr. O. Bangs reported the presence on Cape Cod of two birds which, so far as I know, have not hitherto been recorded as regular winter residents of any portion of New England. In a short visit to the Cape, last December, I found not only the birds reported by Mr. Bangs, but also two other species which are, I believe, unrecorded as winter residents of New England. The birds noted were the following.

Rallus virginianus. VIRGINIA RAIL. — One seen in Barnstable, Dec. 31, 1894. Mr. Bangs reported this bird as fairly numerous in December, 1892.

Circus hudsonius. MARSH HAWK. — Two were seen between Sandwich and Barnstable, Dec. 31, 1894.

Archibuteo lagopus sancti-johannis. AMERICAN ROUGH-LEGGED HAWK. — A female of this species in the black phase was given me by Mr. J. F. Carleton of Sandwich. The bird was shot in Barnstable, Dec. 18, 1894.

Ammodramus sandwichensis savanna. SAVANNA SPARROW. — Dec. 28, 1894, I found a Savanna Sparrow in a small tidal marsh in Sandwich. The next day, and again on the 30th, I found two, always in the same spot.

Spizella pusilla. FIELD SPARROW. — I saw a flock of eight Field Sparrows on the edge of the West Barnstable marshes, Dec. 31, 1894. Mr. Bangs reported them in Dec. 1892.

The only published records I am aware of for the wintering in New England of any of the birds mentioned above (except of course of the

Rough-legged Hawk) are the two following for the Field Sparrow, — Auk, IV, p. 259 and X, p. 205. Four Field Sparrows were seen by Mr. Treat near Hartford, Conn., in January, 1886, and one in January, 1887. The second record is for Massachusetts; a bird was seen by Mr. Torrey at Wellesley, Dec. 19, 1892, and again Jan. 8, 1893.

Cape Cod is, of course, exceptionally well fitted to shelter these birds in winter, as snow rarely lingers there for more than a few days and because there are extensive marshes which are always opened by the tide. It is probable, however, that similar conditions exist in Rhode Island and in Connecticut, so that it would be worth while for observers in those States to investigate the marshes there, unless indeed some, or all, of the above-mentioned birds are already known to winter along the Sound. — RALPH HOFFMANN, *Belmont, Mass.*

Notes from Southern New Jersey.— Phalaropus lobatus. NORTHERN PHALAROPE. — Two specimens of this rare visitant to the New Jersey coast were secured on Peck's Beach, Cape May Co., on the 23rd of May, 1894, and are now in my collection. The above and the one taken by Mr. L. F. Bowers, the day previous (22nd) at the same place, proved to be females. It is said to be extremely rare in this section. The great storm which swept the coast from the 19th to the 22nd of this month, no doubt compelled the birds to seek shelter upon this island.

Ammodramus henslowii. HENSLOW'S SPARROW. — While engaged in collecting a few shore birds on the 22nd of May, 1894, upon Peck's Beach, I ran across a nest of this Sparrow. It was placed at the brink of a small sand dune, the top of which was about six feet above the level of the beach. The nest was sunken flush with the sand and directly against the roots of a solitary bunch of grass. The bird did not leave the nest until I had approached within three feet and almost touched her breast with my finger, when she flew to the edge of a thicket of bayberry and holly bushes some distance away, and, while protesting vigorously, did not come near or call up her mate. The nest, of bleached sedge grass with a lining of fine grass stems, contained four partly incubated eggs of a very light greenish to grayish white, thickly speckled and spotted with chestnut and hazel, with a very little vandyke brown here and there. The markings were confluent at the larger end in two and at the smaller end of the remaining two eggs. One egg also shows many olive gray shell markings. They measure .71 × .63, .70 × .62, .70 × .62, .70 × .62, and are short ovate to oval.— FRANK L. BURNS, *Berwyn, Chester Co., Pa.*

Some Notes from Pennsylvania. — The summer of 1894 I spent in Pike County, Pennsylvania, in the Delaware Valley. Through June my friend, H. L. Beadel, was with me, and together we explored the woods around Dingman's Ferry, our headquarters. On June 14 we made our first important find, the nest and eggs of the Canadian Warbler (*Sylvania canadensis*). The deeply cupped nest was under a tangle of laurel roots,

on the steep bank of a brook in heavy woods. It was built of pine needles, slightly roofed over by leaves, and contained four eggs of the typical Warbler coloration. The identification was made certain by collecting the female which was lurking near by in the laurels. The ravine where the nest was found is not over 150 feet above the level of the Delaware, which at this point is about 950 feet, making a total elevation of 1100 feet above sea-level.

On June 21 we penetrated further into the woods, and in a thicket of small white pines found the nest and four eggs of the Nashville Warbler (*Helminthophila ruficapilla*) at an elevation of about 1175 feet. This nest was under the root of a small pine; deeply cupped and loosely lined with pine needles. I soon collected the female which we had flushed from the nest.

The notes heard from this bird when first flushed were a crackling like the breaking of small twigs. After that, the only note was a staccato *chillip*. The same day I collected two males and one female, adult, Blackburnian Warblers (*Dendroica blackburniæ*). They evidently breed in that part of Pike County, for we found them in one particular patch of the woods all through the summer. Despite our searching, we found no nests of this species.

On June 25, in nearly the same area in which I had found the other Warblers, I heard a Warbler's song that was strange to me. I followed it up and shot its author, a fine specimen of Black-and-Yellow Warbler (*Dendroica maculosa*), male adult; a bird that heretofore I had known only as a migrant in Pike County. The genital organs were fully developed and he was carrying food, so I have no doubt there was a nest not far distant.

We found Parula Warblers breeding abundantly in these woods, and on the pine ridges found Pine Warblers (*Dendroica vigorsii*).

On June 26 I saw a Mockingbird (*Mimus polyglottos*), a rare but regular visitor after the nesting season; and on August 17 I took a female Hooded Warbler (*Sylvania mitrata*), which I have reason to believe nests rarely but regularly in the Delaware Valley. — HERBERT WHEATON CONGDON, *West New Brighton, N. Y.*

Some Uncommon and Rare Birds of Erie County, Ohio. — During the last fifteen years of ornithological collecting the following species have but once in each case fallen into my hands although almost weekly, sometimes daily, excursions have been made. They are now preserved in my collection of mounted birds.

Accipiter atricapillus. AMERICAN GOSHAWK. — A young male was shot Oct. 15, 1889, while Quail hunting. It is the second specimen that has been taken in this immediate vicinity. The other, an adult, is in the collection of Dr. Benschoter of this place.

Coccothraustes vespertinus. EVENING GROSBEAK. — A female, seen in the evergreens around my father's house for several days, was shot

Jan. 30, 1890. There was about one foot of snow on the ground at the time.

Nyctala acadica. SAW-WHET OWL. — A male was taken Nov. 9, 1890. While the Screech Owl is very common this species is extremely rare in this locality.

Falco peregrinus anatum. DUCK HAWK. — A male was shot May 29, 1893, while it was sitting on a piece of drift wood on the beach of Lake Erie.

Strix pratincola. AMERICAN BARN OWL. — An adult female in beautiful plumage was shot on the shore of Lake Erie by two men who had been Duck hunting. It is the only one that I have ever seen here and old sportsmen of whom I have inquired say the same. Dr. Wheaton says ('Birds of Ohio, 1882'): "Rare Visitor." "Not over half a dozen individuals recorded."

Sylvania mitrata. HOODED WARBLER. — A male was taken April 23, 1894, in some underbrush that borders an old railroad near this place.

Ionornis martinica. PURPLE GALLINULE. — A male was picked up dead by some boys Sept. 2, 1894, under a telegraph line that runs along the Lake shore. It had flown against the wires and killed itself. So far as I can ascertain, this is the only specimen recorded as taken in Ohio in the fall. Several have been taken in the spring. — CARL TUTTLE, *Berlin Heights, Ohio.*

Notes from the Upper Peninsula of Michigan. — Accipiter atricapillus. GOSHAWK. — A fine specimen was taken October 18, 1893, while in the act of eating an adult Ruffed Grouse (*Bonasa umbellus*) it had just stricken down. Another was seen on March 27, 1894, chasing a flock of tame Pigeons, which only escaped by rising high in the air.

Nyctala acadica. SAW-WHET OWL. — A young bird came into my hands this summer and is still retained in captivity, having become an interesting pet.

Trochilus colubris. RUBY-THROATED HUMMINGBIRD. — Upon dissection,[1] the gullet of a female taken August 19, 1894, while hovering over a patch of wild flowers, was found to contain from twelve to fourteen small spiders, while broken remains of others were found in the stomach proper. Its gullet was also filled with nectar.

Xanthocephalus xanthocephalus. YELLOW-HEADED BLACKBIRD. — On October 14, 1894, two males were secured and four other individuals seen. On the 15th two were seen; on the 16th, two; on the 17th, one; a female was taken on the 18th. This is the second instance I know of this species being taken in Michigan, the first being on May 17, 1890, when a male in high plumage was secured by E. E. Brewster at Iron Mountain.

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[1] Examination made by Prof. F. E. L. Beal, Div. Orn. and Mam., Dept. of Agr., Washington, D. C.

Sturnella magna neglecta. WESTERN MEADOWLARK.— On May 10, 1894, I secured a female Meadowlark which, though it appeared to be the western form, I at first called *S. magna* (?), knowing the Western Meadowlark had never been taken in the State. Before it was secured the notes and flight suggested the Western, and on examination the coloration answered to the description given by Dr. Hatch in his very valuable work on Minnesota birds. To obtain the correct determination I sent the specimen to Dr. C. Hart Merriam who identified it as *S. m. neglecta*, and adds that it is of special interest as being the first authentic record of its occurrence in Michigan.

Junco hyemalis. SLATE-COLORED JUNCO.— On November 21, 1894, a solitary individual was observed. This I consider a very late date.

Pipilo erythropththalmus. TOWHEE.— One seen May 16, and one male taken May 20, 1894. Very rare here.

Geothlypis agilis. CONNECTICUT WARBLER.— One fully feathered young female secured Aug. 5, 1894, one very young bird August 10, and on August 12, a fully feathered young male. Over fifty seen on the morning of August 29, at Green's Creek, a few miles south of Palmer. The taking of the fledgling August 10 proves that this species breeds here.

Geothlypis philadelphia. MOURNING WARBLER.— An adult pair in high plumage was seen July 15, 1894; on the 16th a female secured, which undoubtedly had a nest in the near vicinity. On August 5 one young male was taken; last seen August 12, 1894.

Harporhynchus rufus. BROWN THRASHER.—Rare in 1893, but common in 1894.— OSCAR B. WARREN, *Palmer, Marquette Co., Mich.*

CORRESPONDENCE.

"A Demand for English Names."

TO THE EDITORS OF 'THE AUK':—

Dear Sirs,—I have been much interested in an article by Mr. W. T. Hornaday, in the January number of 'The Auk,' entitled 'A Demand for English Names,' and feel called upon to reply to some of the points which he has raised, because I believe myself to belong to a class, or at least to be authorized to speak for a class, in whose interest he assumes to write; *viz.*, the "unscientific public." To the agricultural portion of this public I can fairly claim to belong, being a practical farmer myself, and a member of the 'grange.' For a number of years I have been

engaged in a modest way in the popularization of science, both with the pen and in familiar talks to my 'granger' neighbors, and think I can pretty correctly gauge the intelligence of this class of people, and speak from personal knowledge with regard to the way in which scientific names are received by them. I believe Mr. Hornaday would receive some light on this subject if he should hear, as I have often heard, a group of Iowa farmers discussing the damage done to their fruit trees by the *Tortricidæ*, speaking of each species by its correct scientific name. If he will consult the columns of any modern agricultural paper, and compare it with a copy of the same paper, or any similar one, published fifty years ago, or if he will attend a Farmers' Institute and hear the discussions (by the farmers themselves, not the lecturers) on the correct proportion of *carbonaceous* and *nitrogenous* elements that go to make up a proper feed for stock, or the ratio of *nitrates* and *phosphates* for a certain special fertilizer, he may perhaps discover that scientific terms have few terrors for the modern farmer, at least. What he says about the modern editor I am inclined to think is correct.

Among other things, Mr. Hornaday makes the following remarkable statement: "If I can read signs aright, the gap between our really scientific zoölogists (speaking generally) and the unscientific public is growing wider and wider, day by day." I am glad of the first clause, which is a saving one, for I am convinced that he does not read the signs aright. I am fully persuaded that at no time in the world's history has the gap been so narrow as it is to-day; and it is narrowing all the time. If it were otherwise, it would indeed be a discouraging outlook, when we consider the long and illustrious line of popular scientists, from Agassiz down to those of the present day, who have written and talked to the American people on scientific subjects. If all this not only counts for nothing, but is actually a negative quantity, it is high time the scientists stopped their popular publications, and allowed themselves and the public to resume their former relations, which, according to Mr. Hornaday, must have been closer than the present ones. But, thank Heaven, this is unnecessary. The "Tom Jonses" and "Bill Smiths" who "pay the freight" do not need that any one, on their account, should demand "milk for babes" instead of "meat for strong men." They do not hold themselves on so low a plane of intelligence that they cannot understand ordinary scientific names and terms.

Assuming for the moment that any new discovery in the Animal Kingdom is christened with a vulgar name as well as the scientific one, how is the general public to get at the former any more easily than the latter? In any case the description must accompany the name, and any person who can understand that would have little difficulty with the scientific name. The points of excellence of the last are that it is given by one man, and is immediately published in all parts of the civilized world, and will never be changed (at least recent ones will not), and it applies to one animal, and to one only. Not so with a vulgar name. This

may be given by Tom, Dick or Harry, and is not published beyond a limited district. Now, in spite of the fact that the scientist may have already named an animal, the aforesaid T., D., and H. will exercise their inborn right to name any creature that brings itself conspicuously to their notice, and this is the normal way for an animal to gain a vulgar name — the way by which thousands have already gained them,— some of them more than one — as Mr. Gurdon Trumbull has so well shown. This is to be regretted, but it is not a remedy to have a scientist add still another.

The assumption that a vulgar name is necessarily more simple than the scientific one is wholly fallacious. Let us take as an illustration some of our flowering plants. Here we have such names as Geranium, Fuchia, Dahlia, and Verbena, which can be placed in contrast with "Butter and Eggs," "Bouncing Bets," "Love lies Bleeding," and a host of other monstrosities. Among practical working farmers, I have heard *Poa pratensis* used as a shorter and better name than "Kentucky Blue-grass."

There is one other point on which I would like to say a word. I cannot see the propriety of speaking of scientific names as Latin names. It seems to me they are no more Latin than are such words as *conduit, aquaduct, locomotive, benevolent*, and a thousand other common words of the English language. They are supposed to be of the Latin form, in their terminations, at least, but in other parts they often present combinations of letters, the very sight of which would make Cicero turn in his grave.

Right here is one point on which I think I can agree with Mr. Hornaday, and that is in demanding that names shall be made shorter and not contain a lot of letters which cannot be sounded in pronouncing them. It is unfortunate that scientists have been too fond of indulging in *sesquipedalia verba*, which have been the greatest cause of complaint. It seems to me that the difficulty of which Mr. Hornaday complains could be easily obviated by allowing all scientific names to be pronounced exactly as if they were English words, without any regard to the rules of Latin pronunciation, and permitting other nations to follow a similar law.

F. E. L. Beal.

Washington, D. C.

To the Editors of 'The Auk':—

Dear Sirs,—As one of the sinners named by Mr. Hornaday in the January 'Auk' I ask for a little space. I am in entire sympathy with Mr. Hornaday in his grievance of the omission of vernacular names of new species, but really should not have been included in his list of culprits, as a reference to my original description would have shown. Reference to the original descriptions in many others of the cases mentioned shows the charge to be well founded, however. The last

paragraph of the Code of Nomenclature of the A. O. U. should be read to the 'shortcomers' so often that to obtain relief they would remedy their omissions.

Canon II of the Code should be amended by striking out the last clause and inserting "and a species shall not be considered named until provided with both a scientific and a vernacular name." This would give us instant relief, as rather than see their names replaced by some others as describer, the real describers would do their duty to save their rightful honors. If it were not for the above clause we could get even with the describers by furnishing the vernacular name ourselves and tacking our name to the vernacular name, and so steal half of the coveted honor.

Yours respectfully,

F. STEPHENS.

Witch Creek, Cal.,
Feb. 1895.

Cold Storage as an Aid to the Bird Collector.

TO THE EDITORS OF 'THE AUK':—

Dear Sirs,—It is possible that some of the readers of 'The Auk' may sometime find themselves in the very unsatisfactory position that I found myself last September, when I returned from a successful day's collecting trip only to confront an emergency requiring prompt attention, which of course meant the loss of the birds.

Hastily saving two or three of the more important ones, the remainder were packed, just as they were brought in from the field, in a box and placed in the freezing room of a local cold storage concern. A week later I visited the place with the intention of taking them out, but upon examination I found them in perfect condition, and there and then decided to make an experiment, and accordingly left the lot for an indefinite period. Every ornithologist and collector appreciates the fact that sometimes an opportunity occurs to secure a fine series of some bird,—an opportunity that may not occur again for many years,—and it is irretrievably lost because pressure of business stands like a wall between him and the time necessary for the proper preservation of the skins. Being confronted with this situation last fall, and after the favorable start made by the first dozen of birds put in, I determined to solve, if possible, the problem; so during the latter part of September and the first part of October I secured a nice series of the birds sought, together with a scattering lot of Sparrows, Woodpeckers, Canada Jays, etc., birds ranging in size from a Brown Creeper to a Flicker, some 98 in all. Carefully replacing the cotton in their throats, each bird was slipped into a cone

of heavy paper: half a dozen of these cones formed a large package. These, from day to day as fast as accumulated, were placed in a covered wooden box reserved for the purpose in the freezer. About three months later, on the second of January, 1895, the birds were taken out and found to be in excellent condition. The weather outside was about zero, and it kept them frozen, else only a few at a time could have been taken out; and to get them in shape for skinning it was only necessary to place the number one desired to prepare in any warm room, and they soon relaxed without sweating or even dampening a feather. In talking with the foreman of the freezing plant last fall he thought they might 'sweat' enough to wet and spoil the feathers, but the result proved the reverse, for the long freeze had a drying effect, especially at the throat, where the cotton had absorbed all moisture and the skin in some of the smaller specimens was almost rigid. The legs also of some of the smaller ones were beginning to dry, but the toes were not too stiff to place in position. It was necessary to be careful in skinning about shot holes, for wherever the natural moisture had been drained away the skin had a tendency to dry down upon the flesh below; but after preparing the first specimen all these difficulties were discovered and easily overcome in the others.

It occurred to me that many of the members of the A. O. U. and others in the larger eastern cities where cold storage freezers are in operation, might often save specimens which from pressure of business are often left to spoil, in spite of 'good intentions' when they are shot. With good collecting grounds on the coast a few hours' ride away, unexpected windfalls of good species might be properly packed, so that tail and wing feathers are not crumpled, and shipped by express direct to the freezer; then, the following winter, when time hangs leisurely, they can be taken out and prepared with much better results, for each skin can be given all the attention it requires.

FRANK S. DAGGETT.

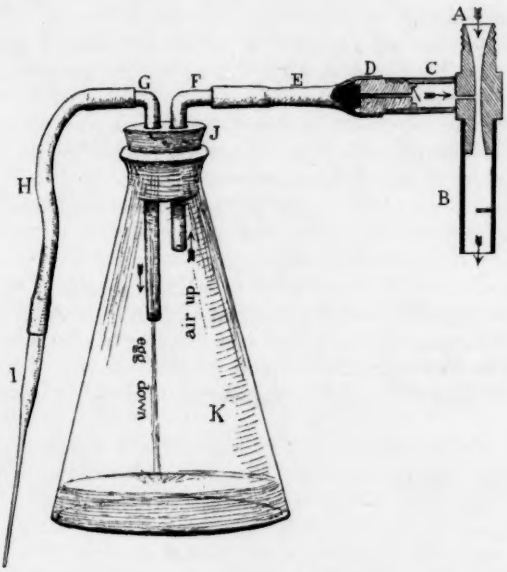
Duluth, Minn.

Apparatus for Preparing Birds' Eggs.

TO THE EDITORS OF 'THE AUK':—

Dear Sirs,—Never having seen any description of the apparatus used by me during the past season for preparing eggs for the cabinet, I am persuaded that a brief article concerning it will not be without interest to oologists. The accompanying cut will explain its mode of operation.

In operating on fresh eggs of size of common hen or less, use a drill not larger than .04 in. diameter; with small eggs .02 in. drill answers the purpose. Insert the point of tube *I* in the egg after turning on the water, and the contents of the egg pass rapidly over into the flask, provided the tube be not of too small calibre. In practice it is well to have a number of these tubes of different diameters.



Make connection between aspirator and water main at A. Provide means for carrying away waste water.

The water in passing through aspirator rarifies the air in K.

A, B, D, Chapman aspirator.

E, H, Pieces of rubber tubing.

G, F, Pieces of bent glass tubing.

J, Rubber stopper, doubly perforated.

K, Conical filtering flask capable of withstanding atmospheric pressure.

I, Glass tube drawn to small calibre at one end.

The tubing used to make tube *I* should have very thin walls, that the internal diameter of the attenuated point may be relatively large. It would appear that there is great danger of collapse if the suction tube nearly fills the aperture in the shell of the egg, but with fresh eggs I have never known it to occur. With eggs in an advanced state of incubation, however, care must be taken to allow air to enter freely around the tube.

I have found little difficulty in removing fully formed embryos from eggs as large as the Robin's, using an .08 in. drill and a suction tube of

.06 in. external diameter. The embryo was allowed to decay as suggested by Capt. Bendire, when, after about a week, it could nearly all be drawn through the tube. A few pieces of bone, the largest being the tip of the upper mandible, were withdrawn with the forceps. The shells are readily washed clean after removing the contents by submerging in water and allowing the pump to act until the wash water comes out clear from the shell. In case of eggs which are injured by water this plan will of course not answer.

The filtering flask used should be of *strong glass*, as otherwise the atmospheric pressure outside might cause its collapse, which may be nearly as disastrous as an explosion.

The rubber tubing should be of the kind known as pressure tubing.

All joints should be made tight to prevent the leakage of air and consequent lowering of the efficiency of the aspirator.

The different parts of this apparatus may be obtained from any dealer in chemical supplies, the most expensive item — the Chapman aspirator — costing about a dollar and a half.

When the water tap is provided with a screw thread, as is sometimes the case, the aspirator may be obtained with a connection suitable for attaching directly to the tap, which does away with considerable trouble in attaching to a water main. A water pressure of twenty-five pounds is found to work well. Probably a higher pressure would give still better results.

E. E. Brewster.

Iron Mountain, Mich.,
Dec. 3, 1894.

NOTES AND NEWS.

Mr. George N. Lawrence, one of the Founders and an Honorary Member of the American Ornithologists' Union, and for some years a member of its Council, died Jan. 17, 1895, at his residence in New York City, in the eighty-ninth year of his age. Mr. Lawrence was especially known as an authority on the birds of tropical America, to which his attention was chiefly given during the long period of his scientific activity. As a writer on North American birds he will be mainly remembered for his association with Baird and Cassin in the authorship of the famous 'IXth Volume' of the Reports of Explorations and Surveys for a Railroad Route from the Mississippi River to the Pacific Ocean, published

in 1858, to which Mr. Lawrence contributed the parts relating to several orders of the Water Birds; and for his well known 'Catalogue of Birds observed on New York, Long and Staten Islands, and the adjacent parts of New Jersey,' published in 1866. He was an intimate friend and scientific associate of the late Professor Baird, and also of Audubon. During the later years of his life the infirmities incident to age greatly lessened his activity in scientific research, but in no way diminished his interest in the science to which he had devoted so many years of his life, his ornithological publications covering a period of fifty years. His high standing as a specialist in his chosen field is well attested by the honorary memberships conferred upon him by many of the leading scientific societies and academies of not only his own country but of Europe. His amiability of character endeared him to a wide circle of friends, so that in his death his scientific associates mourn the loss of a personal friend as well as an esteemed fellow-worker.

In order that proper respect may be shown by the Members of the A. O. U. as a body to the memory of deceased members, the following resolution was adopted at the Tenth Congress of the Union:—

"*Resolved:* That on the decease of any Active Member of the Union, the President shall appoint a Committee of One to prepare a suitable memorial of the life and work of the deceased, to be read at the first Stated Meeting of the Union, and to be published in 'The Auk' as an expression of the sense of the Union."

Mr. Lawrence is the first deceased member coming within the scope of this resolution since its adoption, and, in accordance with its provisions, the President, Dr. Coues, has appointed Mr. D. G. Elliot as the memorialist of Mr. Lawrence — a selection singularly fitting, inasmuch as to no member of the Union is the life and work of the late Mr. Lawrence better known than to his long intimate associate Mr. Elliot. The eulogy will be read at the next Annual Meeting of the Union and published in 'The Auk' for January, 1896.

Dr. Frederick H. Hoadley of New Haven, an Associate Member of the American Ornithologists' Union, died at Palm Beach, Florida, February 26, 1895, aged 45 years. While only an amateur in ornithology he was a great lover of birds and contributed many field notes to the record books of his ornithological friends.

He spent much time in the Adirondacks, but his most important ornithological observations were made on the west coast of Greenland and in Smith Sound, which region he visited in 1882 in the capacity of Surgeon-Naturalist to the first Greely Relief Expedition. His collection was presented to the United States National Museum.

Dr. Hoadley was a graduate of Yale and a man of more than ordinary ability. His death will be mourned by a large circle of friends.

THE Annual Meeting of the Delaware Valley Ornithological Club was held at the Academy of Natural Sciences, Philadelphia, on January 3, 1895. During the past year sixteen meetings were held, with an average attendance of seventeen, showing an increased interest in the work of the club. Among the more interesting communications during the year were 'Summer Birds of the Pocono Mountain,' Witmer Stone and Wm. A. Shryock; 'Breeding Habits of the Snow Bunting,' Dr. Wm. E. Hughes; 'Some Bird Experiences in the South,' Wm. J. Serrill; 'Bird-life on Vancouver Island,' G. S. Morris; 'Birds of Pike County, Pa.,' S. N. Rhoads; 'The Effects of Poke-berries on Birds,' Dr. W. E. Rotzell; 'Summer Birds of Elk County, Pa.,' Wm. L. Baily; and 'Ducking on the Susquehanna Flats,' I. N. DeHaven. In December the Club issued its work on the 'Birds of Eastern Pennsylvania and New Jersey' (see *antea*, p. 170) prepared by Mr. Witmer Stone. It is the intention to publish supplements to this volume every few years, and the author will be glad to receive corrections or additions from any one who may be able to furnish them.

The officers elected to serve for the ensuing year are President, Dr. William E. Hughes; Secretary, Charles J. Rhoads; Treasurer, William L. Baily.

'THE NIDIOLOGIST,' formerly published at Alameda, Cal., will hereafter be issued at No. 150 Fifth Avenue, New York City, Mr. H. R. Taylor, the editor and publisher, having permanently removed to the above address. We trust the new environment will prove congenial, and that the success that has hitherto attended 'The Nidiologist' will be augmented by the new change of base.

MRS. OLIVE THORNE MILLER, whose charming bird-studies have done so much to popularize ornithology, adds to the good work accomplished by her pen by giving series of talks on the habits of our commoner birds. The large attendance at her last course, delivered at the Hotel Waldorf, New York City, is evidence of the success of her undertaking.

MACMILLAN AND CO., of this city, announce, as nearly ready for publication, a novel departure in bird books for field use, under the title 'Bird-craft,' by Mrs. Mabel Osgood Wright, author of 'The Friendship of Nature' (see Auk, XI, p. 314). The text will give non-technical descriptions and biographies of about 200 species of the Song, Game, and Water Birds of the Eastern and Middle States, with keys especially intended for the easy identification of birds in life. It will contain a number of introductory chapters of a general character, and be illustrated with colored plates by a new process.

CORRECTION. In the January number of 'The Auk' (Vol. XII, pp. 87–89), the article entitled 'Notes on the Summer Birds of Central Berkshire County, Mass.,' was inadvertently attributed to Mr. Francis H. Allen. It was contributed by Mr. Ralph Hoffmann, to whom it should be credited.

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A. Hoen & Co. Lithocaustic, Baltimore.

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